

NCHSR

RESEARCH SUMMARY
SERIES

**Estimated Economic
Costs of Selected
Medical Events
Known or Suspected
to be Related to
the Administration of
Common Vaccines**



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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Office of Health Research, Statistics, and Technology
National Center for Health Services Research

National Center for Health Services Research Research Summary Series

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Abstract

Results of this study, with data concerning the incidence of selected medical events, provide DHHS with information for evaluating the scope and extent of the government's potential liability in the conduct of a variety of immunization programs. Estimates of the economic costs of 73 selected medical events known or suspected to be associated with the administration of commonly used vaccines were developed. Ranges of clinical outcomes likely to be associated with DTP, live polio, measles, mumps, rubella, and influenza vaccine were described. Estimates of direct and indirect costs incurred as a consequence of each medical event were generated. Costs related to the utilization of hospitals, other institutional facilities, physicians, other health professionals, pharmaceuticals and other supplies, and rehabilitation and special education services were combined with costs associated with foregone participation in the labor force and other activities for which economic values could be assigned. Both current-year costs and discounted future costs were estimated.

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Judith D. Bentkover

Foreword

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As part of Public Law 94-380, the National Influenza Immunization Program Act of 1976, Congress ordered the Secretary of Health, Education, and Welfare to conduct "a study of the scope and extent of liability for personal injuries or death arising out of immunization programs and of alternative approaches to provide protection against liability (including a compensation system) for such injuries." Critical to the development of any policy options to deal with the issues of the liability for adverse reactions to immunizations is the question of the expected cost of any insurance program either public or private. The National Center for Health Services Research (NCHSR) was approached in the summer of 1977 with a request that it develop estimates of the coverage expenditures that might be expected under various liability arrangements. Using the limited information available on the types of illness or disabilities associated with particular immunizations, the NCHSR developed a study to estimate the direct cost of medical services needed to treat complications and conditions associated with vaccines, and the indirect cost associated with the loss of work, restriction of activities and premature death.

The study presented here provides a framework for systematically characterizing the range of possible outcomes thought to be associated with adverse reactions to vaccines and identifies the resources typically necessary to treat a patient experiencing each outcome. The costs associated with the resource needs were then estimated with data obtained from the medical literature as well as national, state, and private surveys, discharge abstract systems, and fee schedules. These data were supplemented whenever necessary by information pro-

vided by a panel of physicians and by experts in the fields of special education in physical therapy. In addition to providing a large set of detailed cost tables which can serve as a basis for further work on the liability issue, the study makes a significant contribution to the field in methods of modeling and estimating the economic burden associated with the incidence of disease.

The successful completion of this contract is a noteworthy accomplishment and an important step toward beginning to understand the potential cost faced by the government if it assumes liability for adverse vaccine reactions. Nonetheless, it should be recognized that the NCHSR contract is only one of the inputs that will be needed to estimate the costs of alternative liability programs. Other necessary ingredients include reliable estimates of the incidence of adverse reactions, agreement on a single discount rate, information on the rates at which claims are filed and awarded, the availability of alternative forms of insurance coverage, and the administrative costs of the program.

Gerald Rosenthal, Ph.D
Director

April 1981

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Background

Traditionally one of the most widely accepted components of preventive health care, immunization against disease has always entailed risks to the vaccinees. Public health officials, however, have generally agreed that the benefits to both the immunized individual and the community at large have far outweighed the relatively small risks of morbidity and mortality associated with commonly used vaccines, since the economic cost and human suffering associated with the diseases against which individuals are commonly immunized can be staggering. Consequently, the U.S. Government has actively sponsored a series of on-going public immunization programs primarily targeted toward children and designed to reduce the incidence of several diseases including measles, mumps, rubella, diphtheria, tetanus, pertussis, poliomyelitis and influenza. The U.S. experience with the Salk and Sabin vaccines, alone, speaks to the success of such programs. While 47,054 cases of paralytic polio were reported in the U.S. between 1951 and 1953, only 25 cases were recorded in a similar time period from 1974-1976.

As a result of the U.S. experience in 1976 and 1977 with the National Swine Flu Immunization Program, the focus of government concern has shifted toward the issue of liability and its implications for government-sponsored immunization programs. In March 1976, President Gerald R. Ford proposed that everyone in the United States be vaccinated against Swine Flu. The ensuing story has received substantial publicity. Congress appropriated \$135 million for free inoculations. Mass inoculations began in October 1976, were halted in December, and were revived in February 1977 for high-risk individuals only. By that time, only 48 million of the U.S. population of 215 million had been vaccinated. Nearly 3,000 illnesses have been reported by vaccinees, including 500 cases of Guillain-Barre syndrome, while not even one new case of

Swine Flu is known to have occurred. As of October 7, 1977, claims totaling approximately \$1.43 billion had been filed by 914 persons for complications and damages following Swine Flu inoculations.

PL 94-380, the National Swine Flu Immunization Program of 1976, transferred to the government the liability normally assumed by immunization program participants (e.g., clinical investigator, manufacturer, provider, and vaccinee) where negligence was not an issue. The act was expedient, it allowed the Swine Flu Campaign to continue, and it was simple, making the federal government the sole defendant in any suit stemming from a vaccine-associated injury.

In order to develop feasible public policy alternatives that respond to the government's liability in future immunization programs, however, the scope and extent of the government's potential liability for damages resulting from these programs must be ascertained. Assessing this potential requires information on the economic cost of illnesses associated with the administration of vaccines. Only by estimating the direct and indirect costs of the adverse medical events sustained by vaccine recipients and multiplying these by the incidence of these events will the parameters of the liability problem begin to be quantified.

Purpose and scope of research

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The purpose of this project was to estimate the economic costs associated with individual cases of 18 selected injuries and illnesses known or suspected to result from 6 commonly administered vaccines (see Exhibit I-1). When combined with estimates of incidence, these cost estimates will indicate the potential magnitude of liability for personal injury, illness, and death arising from specific immunization activities. This information can constitute an important consideration for the formulation of public policies designed to provide protection for such liability.

Two types of costs associated with each medical event were examined: direct costs and indirect costs. Direct costs are expenditures on behalf of the individual suffering the medical event for the costs of the goods and services necessary for diagnosis and treatment of the acute illness and for overcoming any residual impairment. Indirect costs are not outlays of funds, but rather, are associated with foregone production that results from the impairment caused by the medical event. Other important but less readily quantifiable costs, such as pain and suffering experienced by the patient and his/her family, are beyond the scope of this study. Furthermore, because the focus of this study was on the economic costs accruing as a result of *individual cases* of adverse reaction to vaccines, societal costs were excluded from the analysis. Consequently, although the costs of implementing and operating a liability program and the costs of research directed at the prevention and treatment of adverse reactions are part of the total economic costs of a mass immunization program, they were outside the scope of this study.

In general, the data were obtained from the medical literature as well as national, state, and private surveys, discharge abstract systems, and fee schedules. These data were edited for consistency and

supplemented whenever necessary by a panel of physicians. The data acquisition activities excluded primary data collection, such as patient chart review.

Inasmuch as the purpose of this contract was limited to the development of a research methodology and the generation of the specific cost estimates described above, the collection and incorporation of data concerning the incidence of adverse reactions were not within the scope of this study.

Exhibit I-1
Medical events included in study and patient scenarios
representing possible outcomes

Medical event	Vaccine	Patient scenarios
Anaphylaxis	DTP	Mild Moderate Severe (neurologic deficits) Severe (death)
Arthritis-arthralgia	Rubella	Acute Chronic Severe chronic (residual impairments) Severe chronic (permanent disability)
Aseptic meningitis and encephalitis syndrome	Measles	Mild Moderate Severe (paralysis and epilepsy) Severe (intellectual disintegration) Severe (death)
Cerebellar ataxia.	Measles	Mild Moderate Severe
Convulsions	DTP	Mild Moderate (hyperactivity and retardation) Moderate (epilepsy) Moderate (epilepsy and retardation)

Exhibit I-1 (continued)

Medical event	Vaccine	Patient scenarios
Encephalitis, encephalo- myelitis, and aseptic meningitis	DTP	Mild Severe (epilepsy) Severe (blindness) Severe (hemiplegia) Severe (retardation) Severe (death)
Encephalitis	Mumps	Mild Moderate Severe (optic atrophy) Severe (seizures, coma)
Encephalitis, meningal encephalitis, and encephalopathy	Polio	Mild-moderate Moderate Severe (mental defect) Severe (convulsive disorders) Severe (behavioral disturbances) Severe (death)
Encephalitis	Rubella	Mild Severe
Guillain-Barré	Influenza	Mild Moderate Moderate (residual disability) Severe (respiratory insufficiency) Severe (paralysis) Severe (death)
Nerve Deafness	Mumps	Mild Mild (hearing loss) Moderate (unilateral deafness) Severe (bilateral deafness)
Radiculoneuritis	Rubella	Mild Moderate-severe Severe

Exhibit I-1 (continued)

Medical event	Vaccine	Patient scenarios
Paralytic polio	Polio	Mild Mild (single limb) Mild (multiple limb) Moderate (single limb) Moderate (multiple limb) Severe (multiple limb) Severe (pulmonary infection) Severe (death)
Peripheral mononeuropathy	DTP	Mild Moderate Severe
Reye syndrome	DTP	Mild Moderate Severe Severe (neurologic deficits) Severe (death)
Subacute Scerosing Pan Encephalitis (S.S.P.E.) . .	Measles	S.S.P.E.
Thrombocytopenic pur- pura	Rubella	Thrombocytopenic pur- pura
Transverse myelitis	DTP	Moderate Severe Severe (death)

Methodological overview

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The approach to estimating the economic costs of selected medical events known or suspected to be related to the administration of common vaccines involved four steps:

(1) The construction of Medical Event Profiles (MEPs) in order to delineate the clinical outcomes and identify the resources required by patient scenarios specified for each selected medical event. Originally, 146 clinical outcomes were specified which were then combined into 73 patient scenarios identified as relevant for costing (also shown in Exhibit I-1). These patient scenarios represent the range of possible outcomes and capture significant cost differences.

(2) The quantification of per-case direct costs associated with the diagnosis, treatment, and rehabilitation of patients with illnesses and outcomes of each selected medical event as described for the patient scenario.

(3) The estimation of per-case indirect costs associated with alternative patient scenarios specified for each selected medical event.

(4) The combination of direct and indirect costs in order to generate estimates of the economic costs for each selected medical event.

In addition, throughout the research, a set of methodological assumptions were adopted. These are summarized in Table I-1.

Table I-1
Summary of methodological assumptions

Category	Assumption	Rationale/implication
• Timing of medical event	The individual experiences the adverse reaction in FY 1979	This assumption ensures that treatment modalities are consistent with the existing state of medical knowledge.
• Designation of a base year	FY 1980 was specified as the base year.	This assumption ensures consistent cost calculations and comparisons. All costs quoted in the analysis are based on FY 1980 price levels and presented in FY 1980 dollars.
• Choice of discount rate	Three discount rates (2.5%, 6.0%, 10.0%) were employed in the analysis. These rates do <i>not</i> include adjustments for other factors such as productivity.	This assumption responds to the fact that estimated costs will vary with the choice of discount rate and the impact of changes in the discount rate will not necessarily be uniform for all diseases.
• Treatment of general inflation	All nonhealth care costs are assumed to increase at the same rate: the formula, used in the analysis, contains no <i>explicit</i> adjustment inflation.	

In order to express price data in FY 1980 dollars, a series of FY 1980 price indices were first predicted on the basis of historical data. Then the data were inflated by multiplying the latest price data available by the ratio of the appropriate FY 1980 price index to the price index corresponding to the year of the data.

Category	Assumption	Rationale/implication
	$\sum \frac{P_{FY1980}^q}{(1+d)^n}$ <p>where</p> <p>P_{FY1980} = price in FY 1980 dollars q = quantity of resource purchased d = discount rate n = number of years over which costs extend.</p>	<p>In order to derive the estimates of the FY 1980 price indices, a trend analysis was performed on selected Consumer Price Indexes (CPIs) which served as proxies for all direct costs, except hospital expenditures. Because hospital cost inflation is affected by the change in the nature of hospital care and the quantity of ancillary services utilized, the price index for hospitalization was computed on the basis of historical per diem hospital costs rather than historical trends exhibited in the CPI for room rates.</p>
• Treatment of health care cost inflation	In the short run, the rate of health care cost inflation will exceed that of the general rate of inflation by a factor of 1.15.	<p>The numerator of the inflation formula (see above) was multiplied by 1.15 whenever q referred to the resource category inflated to FY 1980 dollars by the Medical Care CPI.</p> <p>The 1.15 differential inflation factor was estimated by a panel of health economists on the basis of historical data and future expectations. It reflects the view that medical care prices will inflate more rapidly than other prices until they reach a relative level approximately 15% greater than is currently the case. Since most cost calculations use figures for either one year or a lifetime, the adjustment could be approximated by a one-time 15% increase. In fact, the differential in year 1 might be only 2%, in year 2, 4%, etc. This factor was applied only once. In all other cases we assumed that the overall inflation rate would appropriately reflect future price trends.</p>
• Treatment of life expectancy	Mortality experience was included in the computation of present values for future costs. Costs incurred in any given future year are adjusted by the probability that an individual of a given age will survive to that year.	Incorporating projected death rates into the analytical framework allowed the duration of streams of future direct and indirect costs to be determined.
• Treatment of age and sex	Throughout the analysis, 40 separate age-sex categories were maintained.	<p>The age-sex categories allowed for the identification of systematic differences in treatment modalities, earnings potential, and life expectancy. In addition, the 40-cell taxonomy of sex and age-group combinations was designed to facilitate compatibility of results with incidence data.</p> <p>In the actual computation of future direct costs, cost estimates were developed for single-year, age-sex categories, and the results averaged for display by the 40 age-sex categories defined.</p>

Medical event profile (MEP) development

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Estimating the costs of selected medical events associated with the administration of commonly used vaccines required specific descriptions of the nature, duration, and consequences of these illnesses/injuries. In addition, an explicit statement of the health care resource needs of individuals experiencing each of the vaccine-associated illnesses was required to develop accurate cost estimates. A survey of the clinical literature, contacts with numerous organizations whose activities relate directly or indirectly to vaccines and/or immunization programs, and discussions with physician experts were used as the bases for developing an appropriate analytical framework to represent and compare the clinical courses of these specifically defined illnesses and to account for a range of possible outcomes for each, with the exception of some available data concerning hospitalization for persons experiencing the selected medical events, no data were found that could be used to characterize the clinical course and resulting resource requirements for illnesses of such specificity and rarity.

Consequently, lack of sufficient existing data and methodology necessitated the development of a new approach to identify and describe the clinical and economic consequences of the occurrence of selected medical events, and to incorporate both existing data and additional data from a panel of physicians, acknowledged experts in the area of adverse reactions to vaccines. Specifically, members of the physician panel reviewed the clinical literature to identify existing information pertaining to the clinical course of the selected medical events and, where necessary, supplemented this information based on their own clinical experience. To facilitate the estimation of outcome-specific costs for each medical event under study, a three-step process was designed. These steps included:

- (1) exploring the clinical literature available for each medical event and documenting existing information;

- (2) defining a range of possible outcomes for each medical event; and

- (3) estimating the resources required by individuals experiencing each of the illness outcomes identified for each medical event.

In the first step, a review narrative was produced, summarizing the state of clinical knowledge regarding the medical event. In the second step, using this information supplemented by the collective experience of the physician consultants, the range of possible outcomes (e.g., recovery, recovery with residual disability, death) was identified and displayed graphically in the form of an "outcome tree" (the Clinical Event Profile). Finally, in the third step, resource needs, nature, and duration of disability were specified in a Resource Utilization Profile (RUP) for each outcome or patient scenario (each represented by a branch of the tree). Finally, individual RUPs were combined into modified RUPs on the basis of medical and cost similarities to finalize the patient scenarios utilized for costing.

The result of this process is a series of Medical Event Profiles (comprised of all the components described above) which provide a clinical characterization of the medical event and its possible outcomes and specify typical resource needs for a patient experiencing each outcome. Exhibits I-2 through I-4 illustrate the components of a MEP.

Estimation of direct costs

The Resource Utilization Profile developed for each of the 73 patient scenarios specifies the types and quantities of resources required to diagnose, treat, and to the extent necessary, rehabilitate the patient who experiences a vaccine-associated illness. Expenditures for these resources comprise the "direct costs" associated with each patient scenario.

Nine categories of resources were specified including Hospital Care, Physician Services, Drugs, Home Modifications, Rehabilitative Therapy, Special Education, Long-Term Care, Home Care, and Equipment. For each patient scenario, direct costs were estimated for all relevant direct cost categories and then combined to derive an estimate of the total direct costs for that patient scenario. Table I-2 summarizes the direct cost categories and sources of cost data used for the estimates.

In all cases, direct cost estimates reflect only those expenditures that would be incurred on behalf of the individual contacting the illness whether these costs are borne by the individual and his or her family, by a third-party payer, or by both. Additional types of direct cost, such as family travel costs or the costs of psychological counselling for family members, were outside the scope of the analysis.

In general, a four-step process was employed to aggregate costs within each direct cost category and then to combine them to derive an estimate of the total direct costs for each patient scenario. These steps included:

(1) estimating resource requirement (Q) based on the RUP specifications for the patient scenario;

(2) estimating unit costs (P) for each resource specified;

(3) multiplying the quantities of resources required (Q) by the unit costs (P) estimated for each resource to determine total cost estimates (PQ) for each direct cost category for each patient scenario;

and

(4) combining direct cost category totals

$$\left(\sum_{i=1}^a P_i Q_i \right)$$

to derive an estimate of the total direct costs for each patient scenario.

This four-step process was completed for each of the 73 patient scenarios. Direct costs for each category were estimated for the base period and as required for future years. In some cases, direct costs continue to be incurred over the entire lifetime of the vaccine experiencing an adverse reaction. Direct costs incurred beyond FY 1980 were represented in FY 1980 dollars and their expected value for each future year determined according to sex-specific life expectancy data. These expected values were then discounted to their 1980 value using three alternative discount rates (2.5%, 6.0%, 10%) as described earlier. The 1980 value of future costs for all direct cost categories were then aggregated and added to the direct costs incurred in the base period.

The treatment of future direct costs for each direct cost category can be represented by the following formula:

$$\sum_{i=b+k}^{n-m-k-b} \left[\frac{C_{m+i-1} * \prod_{j=m}^{m+i-1} P_j}{(1+d)^{(i-b)}} \right]$$

where

m = current age of patient,

n = last year of life or last year in which cost is incurred,

k = number of years after base period in which cost began,

b = number of years in base period,

C_{m+i-1} = annual cost for each year in the future cost stream (year $(m+b)$ through n) of specific direct cost components,

P_j = probability of survival for one year given the patient age j , and
 d = discount rate.

The formula above presents the present value of future costs for each direct cost category, in FY 1980

dollars, incurred by an individual of a given age and sex contracting an adverse reaction. Incorporated in this formula are adjustments for life expectancy, duration of time period in which future costs are incurred, number of years after the base year that the future cost begins, and discount rate.

Table 1-2
Overview of sources of direct cost data

<i>Cost component</i>	<i>Sources</i>	<i>Applications and methodological considerations</i>
• Hospital Care	20% Medicare Sample Childrens Hospital Automated Medical Program California Health Facilities Commission	Hospital charge data for age, sex, and illness categories were obtained by combining length of stay data by specific ICDA diagnosis, with average per diem charges from medical abstract files. Where illness-specific average daily hospital charge data did not exist, proxy variables were defined.
• Physician Fees	<i>Medical Economics Survey</i> <i>California Relative Value Studies</i>	Physician fees were estimated on the basis of charges for both initial and follow-up visits to specialists and nonspecialists in inpatient and outpatient settings. Charges associated with special procedures were added to those computed for visits.
• Drugs	<i>Red Book</i> <i>National Prescription Audit</i>	Drugs administered during a hospital stay were considered to be included in total hospital charges. For those patient scenarios which called for drugs on an outpatient basis, the associated costs were estimated from the wholesale cost with an added mark-up or for prescription drugs, from typical prescription costs including the pharmacist's charges.
• Home Modifications	Smart and Sanders	For patient scenarios resulting in residual physical disability that require the use of a wheelchair, but specify home rather than institutional care, costs of home adaptation were estimated (as a one-time expenditure) utilizing the costs previously estimated by Smart and Sanders, updated to FY 1980.
• Rehabilitative Therapy	Charge Survey, American Occupational Therapy Association Major New England Rehab Hospital	Costs were estimated for three types of rehabilitative services: physical therapy, occupational therapy and speech therapy when these were specified in long-term care or outpatient settings.
• Special Education	Commonwealth of Massachusetts Department of Education	Since national data on special education costs were unavailable, the costs of special education were derived from a well-established, comprehensive state program that is likely to serve as a model for a federal special education program.
• Long-Term Care	<i>1977 National Nursing Home Survey</i> <i>1976 Survey of Institutionalized Persons</i>	Data from these several sources were used to estimate the costs of a range of long-term needs specified in the RUPs, from temporary placement in a nursing home to life-long placement in a residential care setting.
• Home Care	HCFA Division of Beneficiary Services Survey	To estimate the costs incurred by patients requiring intermittent at-home assistance from a nurse or home-maker/home health aide, unit charge data were developed from a sample of billing forms submitted by home health agencies for Medicare beneficiaries.
• Equipment	Major Suppliers	The costs of temporary or permanent use of equipment (e.g., wheelchairs) and appliances (e.g., splints and braces) were estimated from price data supplied by major suppliers. The different lifetimes and maintenance requirements associated with the different types of equipment were used to estimate the annual cost associated with each item.

Estimation of indirect costs

In addition to estimating the direct costs of selected vaccine-associated medical events, the indirect costs of vaccine-associated illness were identified and estimated using the "human capital" approach. This approach focuses on the current and future losses in productive output that society incurs when an individual experiences days of work loss, reduced productivity, or a loss in productive years as a result of a vaccine-associated medical event. Consequently, indirect cost estimates reflect the opportunity costs of *morbidity* as well as premature *mortality*. The human capital approach is the methodology currently recommended by DHHS for use in cost-of-illness studies (Hodgson and Meiners, 1979).

As a basis for the estimates of indirect cost, the earnings data developed by Berk, Paringer, and Mushkin were adjusted for inflation and productivity trends. The earnings data also include estimates of the economic value of services performed outside the marketplace, including those services performed by housewives. These data were compatible with the study's age-sex taxonomy as well as the choice of the human capital approach. The data reflect the assumption that age and sex-specific survival rates will change continuing to reflect historical trends. They also reflect the assumption the probabilities of employment by age and sex will continue in the future in a pattern similar to that observed in 1975 and that consumption should not be deducted from an individual's expected earnings in estimating that person's economic value to society.

Furthermore, these data expressed foregone production both as fiscal earnings (e.g., single year's earnings estimates) and as present values of lifetime earnings (e.g., combined current and future earnings estimates), facilitating the estimation of indirect costs of vaccine-associated medical events with and without long-term disabilities. The present

value of life-time earnings represents foregone earnings beginning the year after the adverse reaction occurs. Loss in earnings for the year in which the adverse reaction occurred is represented by fiscal earnings.

This analysis of the indirect costs of vaccine-associated medical events does not incorporate estimates of intangible or secondary indirect costs, for example, the costs of pain and suffering, the time costs of family and friends who care for persons experiencing vaccine-associated illness, or those additional social and support services that might be required by the family of a person suffering such an illness. While these are important considerations and their absence may result in an underestimate of total indirect costs, lack of data and methodological limitations preclude their inclusion in a reasonable estimate of the indirect costs of vaccine-associated medical events.

The study provides a large set of detailed tables which can serve as the basis for further work on the liability issue. The cost estimates are displayed in a series of detailed and summary tables which present cost information by age and sex and at three discount rates (e.g., 2.5%, 6.0%, 10.0%). For each of 73 patient scenarios, the following *summary cost tables* were generated:

- *Direct Costs* (i.e., hospital care; inpatient and outpatient physician visits; drugs; home modification; physical, speech, and occupational therapy; special education; long-term care; home care; equipment; total).
- *Indirect Costs* (i.e., duration of work loss, loss in fiscal earnings, present value of lifetime earnings, total earnings loss).
- *Indirect/Direct Cost Comparison*
- *Total Costs*

In addition, for each patient scenario a set of *detailed cost tables* was prepared which provides cost estimates for individual direct cost components. These tables present base period costs and present value of future costs for each direct cost element by age, sex, and discount rate. An illustrative set of cost results for the patient scenario Severe Guillain-Barre associated with Influenza Vaccine (Respiratory Insufficiency) is contained in Exhibit I-5.

A number of general cost findings are of particular interest. For example, when patient scenarios include future costs, the most important determinant of total cost is the discount rate. Table I-3 gives the cost (total, direct, and indirect) estimates for selected patient scenarios by sex according to alternative discount rates. The patient scenarios shown in Table I-3 were selected to reflect the mild and most severe (in terms of resource use) disease patterns for some of the medical events suggested for liability coverage.

It is clear from Table I-3 that for mild reactions that begin and end in the first year, the discount rate makes no difference since there are no future costs to be discounted to their present value. For more serious reactions, however, the affect of the discount rate becomes very important. As diseases become more severe medical costs tend to continue for more than one year, possible for a patient's lifetime. Also, a person's ability to engage in usual activities is diminished, resulting in indirect costs from lost earnings over the period of illness. For each of the severe medical events shown in Table I-3 it can be seen that the rate at which these future costs are discounted to their present value has a dramatic impact on the cost estimates. These results are generalizable. For patient scenarios including future costs, the most important determinant of total cost is the discount rate; the lower the discount rate, the greater the costs.

In addition to the affect of the discount rate on the magnitude of total costs, choice of discount rate also affects the relative importance of the cost components. For example, using a 2.5 percent discount rate, the indirect costs for males range from about 74 to 83 percent of total costs for the severe reactions in Table I-3. In contrast, using a 10.0 percent discount rate for the same reactions, indirect costs for males range from about 34 to 55 percent of total costs. The significance of this for the purposes of setting up a liability program that covers both direct and indirect costs is not clear. However, if the question as to whether *both* direct and indirect costs should be covered is a point of discussion, the impact of the discount rate on the importance of indirect costs should be recognized.

The affect of sex differences on the cost estimates is also worth noting. While the patient scenarios reveal virtually no difference in the clinical course of the medical events due to differences in sex, there

Table I-3
Cost of selected medical events by discount rate for children ages 1-2

Medical event and patient scenario	Type of cost	Discount Rate and Sex					
		2.5%		6.0%		10.0%	
		Male	Female	Male	Female	Male	Female
Mild Anaphylaxis due to DTP without shock and with complete recovery	Total	95	95	95	95	95	95
	Direct	95	95	95	95	95	95
	Indirect	0	0	0	0	0	0
Anaphylactic shock with residual brain damage due to DTP	Total	825,202	648,564	262,205	215,839	100,396	89,238
	Direct	143,886	151,257	72,317	73,512	44,750	45,023
	Indirect	681,317	497,307	189,889	142,327	55,646	44,216
Asceptic Meningitis and Acute Encephalitis Due to Live Measles Virus Vaccine -Mild with complete recovery	Total	1,313	1,313	1,313	1,313	1,313	1,313
	Direct	1,313	1,313	1,313	1,313	1,313	1,313
	Indirect	0	0	0	0	0	0
Asceptic Meningitis and Acute Encephalitis due to Live Measles Virus Vaccine- Severe with residual intellectual deterioration	Total	923,107	740,270	342,881	290,969	161,998	150,802
	Direct	241,790	249,277	152,993	154,275	112,112	112,441
	Indirect	681,317	497,307	189,889	142,327	55,646	44,216
Paralytic Poliomyelitis-Mild with recovery	Total	1,766	1,766	1,766	1,766	1,766	1,766
	Direct	1,766	1,766	1,766	1,766	1,766	1,766
	Indirect	0	0	0	0	0	0
Paralytic Poliomyelitis-Severe with respiratory paralysis/multiple limb	Total	820,071	638,543	300,715	253,599	152,877	141,573
	Direct	138,754	141,236	110,826	111,272	97,231	97,357
	Indirect	681,317	497,307	189,889	142,327	55,646	44,216

are differences in the overall costs of the selected medical events sustained by men versus women. These are due to differences in life expectancy and indirect costs by sex. Females incur higher estimated future direct costs than males of the same age and illness outcome, as a result of the longer life expectancy for females than males. In contrast, males tend to incur greater losses in earnings due to the higher values for expected earnings attributed to males. No good basis was found on which to predict future changes in the female-male work experiences and earning rates so the estimates tend to perpetuate this historical difference.

The typical net effect of these offsetting factors on the cost estimates can be seen from the data in Table I-3. For the mild outcomes there is no cost difference by sex since these scenarios involve no future costs. Where there are future direct and indirect costs as in the severe disease scenarios of Table I-3, males tend to have higher total costs than females. In other words, the higher values for expected earnings attributed to the males tend to more than compensate for the cost differences associated with the longer life expectancy for females. It should also be noted that the size of this difference is related to the discount rate. At a 10 percent discount rate, total costs for females are between about 88 and 93 percent of total cost for males. At a

2.5 percent discount rate, total costs for females are between 78 and 80 percent of total costs for males. It can be seen, therefore, that the relationship of sex and costs also depends on other factors, most notably the severity of the disease and the discount rate.

Another key cost determinant to consider is age. Generally, the highest costs are incurred by young adults who experience vaccine-associated illnesses. For example, the age and sex-specific cost estimates based on a discount rate of 10.0 percent for the patient scenario "Severe Paralytic Polio" (presented in Table I-4), range from \$64,288 for a male 85 years or older to \$371,532 for a male 30-34 years of age. Similar (but not identical) trends are exhibited in Table I-4 for females and by alternative discount rates. These results largely reflect the present value of foregone production which is at the highest level for young adults entering their productive years.

As might be expected, the relative importance of cost components also varied by the severity of outcomes. For patient scenarios with mild outcomes where hospitalization is required, hospital care tends to be the largest component of direct costs. For patient scenarios with severe outcomes, long-term care and special education tend to account for the larger components of direct costs. However, for most events, hospital costs and physician fees comprise most of the direct costs.

Table i-4
Severe paralytic polio/polio vaccine (multiple limb and respiratory paralysis)
Total costs

	<i>Males</i>			<i>Females</i>		
	2.5%	6.0%	10.0%	2.5%	6.0%	10.0%
1.	825550.	299498.	151405.	633436.	251441.	140026.
1-2.	820071.	300715.	152877.	638543.	253599.	141573.
3-4.	822059.	303541.	156032.	640662.	256475.	144747.
5-9.	833445.	342007.	180505.	645178.	284968.	163970.
10-14.	846371.	389855.	217174.	653949.	320255.	192823.
15-19.	861990.	447508.	270280.	661400.	361678.	233716.
20-24.	861158.	498750.	326409.	649650.	390484.	269785.
25-29.	824738.	521645.	363912.	605760.	390124.	282668.
30-34.	750889.	508729.	371532.	541488.	367442.	273891.
35-39.	659882.	475952.	362729.	475522.	339700.	261274.
40-44.	561195.	430111.	342710.	409713.	307972.	244866.
45-49.	457613.	371649.	309908.	345978.	273723.	225759.
50-54.	353277.	302475.	263393.	283513.	235475.	201580.
55-59.	256938.	230899.	209678.	223987.	194396.	172445.
60-64.	174907.	163400.	153711.	171146.	153716.	140218.
65-69.	115838.	109863.	104398.	130922.	120505.	111868.
70-74.	93460.	90429.	87356.	107692.	101824.	96519.
75-79.	80411.	78886.	77108.	91322.	88211.	85068.
80-84.	73409.	72434.	71201.	80093.	78520.	76684.
85 +	65511.	64991.	64288.	69831.	69195.	68314.

Descriptive analysis of selected results

Cost estimates for persons less than one year of age (those persons most frequently immunized and, in theory, experiencing a majority of vaccine-associated events) are analyzed below to provide estimates of the magnitude of costs for this key age group. In the case of Guillain-Barre, cost estimates for a more relevant age cohort (65-69) have been substituted for the costs estimated for persons less than one year of age. This medical event has been associated with the administration of influenza vaccine which, unlike most of the other vaccines under study, is generally administered to the elderly and infirm and not to healthy infants. Cost estimates derived on the basis of a 2.5 percent discount rate were used for purposes of discussion. This use of the lowest of the three discount rates results in the highest estimate of the present value of future costs. It is used to highlight the upper range of per unit liability costs potentially faced by the Government.

Several special analyses of the cost estimates for this age cohort and discount rate were performed. These analyses focus on identifying general cost patterns and cost behavior and include:

- An analysis of costs by medical event.
- An analysis of costs by severity of outcome.
- An analysis of costs by vaccine.

Analysis of the cost estimates for even one age cohort and one discount rate involves a significant amount of data. Consequently, the following discussion emphasizes the range of costs in order to generate a picture of the magnitude and diversity of estimated costs.

Analysis of costs by medical event

Table I-5 summarizes the estimated cost data by the 18 medical events. Ranges are provided by sex

for direct and indirect costs.

There is a wide range in cost and severity of outcome associated with most medical events. With some exceptions, there are generally four to five outcomes specified for each event representing mild, moderate, and severe forms of the disease. These outcomes range from minimal symptoms to death.

Of the 18 medical events, nine involve fatal outcomes. In addition, most incorporate some outcomes that result in a maximum loss in earnings; other outcomes with no indirect costs; and still other outcomes with and without future costs. This diversity within each medical event is reflected in the extremely large range of costs identified in Table I-5. For example, an anaphylactic response associated with the administration of DTP vaccine may range from a mild reaction subsiding spontaneously and resulting in complete recovery within minutes to coma, vascular collapse, and/or death. The corresponding total cost estimates associated with these outcomes range from \$95 to \$825,769 for a male less than one year of age. For all medical events, however, the maximum estimated cost per event is less than \$1,000,000.

For a substantial number of medical events the most severe outcome, death, is significantly less costly than less serious forms of the illness (e.g., anaphylaxis, transverse myelitis, Guillain-Barre syndrome, etc.). For fatal outcomes, indirect costs equal the maximum loss in earnings generally necessitated by other severe outcomes, but fatal outcomes (with the exception of the prolonged illness associated with SSPE) tend to involve a short acute illness and, therefore, fewer direct expenditures.

While the extreme ranges in costs for individual medical events preclude a single estimate for the actual magnitude of costs associated with specific

TABLE I-5
Ranges of direct, indirect, and total cost by medical event,
for Persons Less Than One Year of Age, At a Discount Rate of 2.5%

Medical event	Range of costs					
	Total		Direct		Indirect	
	Male	Female	Male	Female	Male	Female
(1) Anaphylaxis/DTP . . .	95-825,769	95-638,380	95-138,880	95-145,999	0-686,888	0-492,381
(2) Arthritis/Rubella . . .	49-869,229	49-692,358	49-182,341	49-199,977	0-686,888	0-492,381
(3) Aseptic Meningitis/ Acute Encephalitis/ Measles	1,313-927,533	1,313-740,270	1,313-240,644	1,313-247,889	0-686,888	0-492,381
(4) Convulsions/DTP . . .	259-869,574	259-682,266	259-182,689	259-189,885	0-686,888	0-492,381
(5) Encephalitis/DTP . . .	2,487-849,474	2,487-662,651	2,487-162,586	2,487-170,270	0-686,888	0-492,381
(6) Encephalitis/Mumps . .	2,167-186,649	2,167-138,218	2,167- 14,927	2,167- 15,123	0-171,722	0-123,095
(7) Non-Paralytic Polio . .	422-903,160	422-715,960	422-220,065	422-227,376	0-686,888	0-492,381
(8) Encephalitis/Rubella .	2,083- 5,216	2,082- 5,270	2,083- 5,216	2,082- 5,270	0- 0	0- 0
(9) Nerve Deafness/ Mumps	575-462,315	575-345,886	575- 26,905	575- 27,146	0-412,133	0-295,429
(10) Paralytic Polio	1,766-825,550	1,766-633,436	1,766-138,662	1,766-141,055	0-686,888	0-492,381
(11) Peripheral Mono- . . .	1,443-208,225	1,443-153,885	1,443- 15,896	1,443- 16,018	0-192,329	0-137,867
Neuropathy/DTP						
(12) Neuritis/Rubella . . .	35- 1,293	35- 1,293	35- 1,293	35- 1,293	0- 0	0- 0
(13) Reye Syndrome/DTP . .	2,644-878,098	2,644-693,044	2,644-191,201	2,644-200,633	0-686,888	0-492,381
(14) Transverse Mye- . . .	447,974-891,963	332,036-705,384	35,841-205,075	36,607-213,003	412,133-686,888	295,429-492,381
litis/DTP						
(15) Cerebellar	2,364-894,790	2,364-707,470	2,364-207,901	2,364-215,089	0-686,888	0-492,381
Ataxis/Measles						
(16) Guillain-Barre/	11,694-120,062	11,419-137,151	9,087- 88,933	9,087- 99,513	2,607- 31,129	2,332- 37,634
Influenza ¹						
(17) S.S.P.E.	846,210	651,991	159,332	159,610	686,888	492,381
(18) Thrombocytopenic . .	34	34	34	34	0	0
Purpura/Rubella						

¹ For persons 65-69 years of age at a discount rate of 2.5%.

vaccine-associated illnesses, several additional observations can be made:

- For most medical events, indirect cost estimates range from zero to the total value of potential production, depending on the severity of outcome.
- Several medical events analyzed do exhibit lower ranges of cost across all severity levels (e.g., encephalitis, neuritis, thrombocytopenic purpura, all associated with the administration of rubella vaccine.

Analysis of costs by disease severity

The nature and magnitude of cost estimates can also be analyzed across medical events for alternative levels of severity. Several considerations must be kept in mind when reviewing cost results in this form:

- Not all of the 18 medical events had specified illness outcomes combined into three outcomes (mild, moderate, severe). For some medical events, two or three moderate categories alone were specified to more accurately reflect differences of resource utilization and cost. For other medical events, there were no severe outcomes identified as relevant.
- Although patterns in the costs estimated across diseases by severity category were observable, differ-

ences in the meaning of severity by disease do somewhat limit the analysis. For example, while severe patient scenarios constitute *mild* forms of paralytic polio, most manifestations of the disease are serious enough to generate significant costs. In contrast, patient scenario, Severe Radiculoneuritis, constitutes a severe form of the disease, but generates significantly lower costs than most other disease outcomes designated as "severe."

Table I-6 summarizes the clinical and cost information by disease severity. With few exceptions, mild disease scenarios describe illnesses that are self-limiting, of short duration, and do not involve permanent disability. Consequently, the indirect costs attributable to these illness outcomes are generally very low or non-existent. Those costs that are generated by the "mild" outcomes are, for the most part, direct costs. Though relatively small in magnitude, the greatest proportion of these costs tend to result from outpatient physician visits, inpatient visits, and hospital stays. Several scenarios do not involve hospitalization at all. In addition, a significant number of mild outcomes require minimal, inexpensive drug therapy, some physical and occupational therapy, and some special education. For none of these profiles were expenditures for home

TABLE I-6
Direct, indirect, and total costs for persons less than one year of age ¹
by illness severity, assuming a discount rate of 2.5% ²

	<i>Mild</i>		<i>Moderate</i>		<i>Severe</i>	
No. of Patient Profiles in Category.....	18 ³		18 ³		36	
No. and Proportion with death ⁴	0/0%		0/0%		9/25%	
Proportion with only base period costs.....	74%		37%		5%	
Proportion with maximum indirect costs.....	0%		21%		69%	
Proportion with no indirect costs.....	84%		47%		11%	
Costs by Sex						
Range of	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>	<i>Male</i>	<i>Female</i>
Total Costs	\$34-\$439,313	\$34-\$323,193	\$256-\$869,574	\$256-\$682,266	\$1,293-\$927,533	\$1,293-\$740,270
Direct Costs	\$34-\$ 27,180	\$34-\$ 27,764	\$256-\$182,685	\$256-\$189,885	\$ 126-\$235,573	\$ 126-\$247,889
Indirect Costs	\$ 0-\$412,133	\$ 0-\$295,429	\$ 0-\$686,888	\$ 0-\$429,381	\$ 0-\$686,888	\$ 0-\$492,381

¹ Persons less than one year of age are those most frequently immunized.

² The discount rate of 2.5% generates the most costly estimate of the three discount rates used in the study.

³ The exclusion of one profile, designated as "mild-moderate," results in 72 rather than 73 patient profiles being represented in this table.

⁴ Patient profiles which are characterized as ultimately progressing to death.

modifications or long-term care required, and in all but a few cases no costs were specified for equipment or home care.

Reviewing the costs estimated for persons less than one year of age, using a 2.5 percent discount rate revealed that total costs associated with "mild" outcomes range from \$34 to \$439,313 for males and \$34 to \$323,173 for females. However, when three outliers are removed, the range drops to \$34 to \$11,694 for males and \$34 to \$11,419 for females. (The three outliers reflect the definition problem discussed previously. While labelled "mild" they constitute somewhat serious disease manifestations and, consequently, generate significant costs.)

Of the 18 profiles falling in the "mild" category, none resulted in death, 14 (74 percent) incurred costs in the base period only, zero generated the maximum loss in earnings, and 15 (83 percent) involved no indirect costs at all. Of those that did require future expenditures, they were generally attributable to a small number of visits to non-specialist outpatient physicians. Since most costs occur in the base period or over a small number of years, there is little difference in estimated costs by sex.

The 18 patient scenarios that describe "moderate" disease outcomes include a wide variety of resource utilization patterns and represent a large range of costs. Constituting approximately 26 percent of the patient scenarios analyzed, they include no deaths and four maximum earnings losses. Furthermore, they exhibit fewer consistent patterns than the other two categories of disease outcomes. In general, they reflect a cost structure that tends to

fall above the "mild" scenarios and below the "severe." For the "moderate" illness outcomes total costs range from \$256 to \$869,574 for males and \$256 to \$682,266 for females.

All nine fatal outcomes were categorized in the "severe" disease outcome category. They constituted 25 percent of the 36 outcomes in this group and generated extremely high costs. In most cases direct expenditures are dwarfed by the costs attributable to losses in earnings.

In addition to the nine fatal outcomes, 25 (69 percent) of the 36 "severe" outcomes generated the maximum loss in fiscal earnings reflecting the severity of permanent disability generally associated with these patient scenarios. Most direct cost components are represented in the scenarios in this category, with a high percentage of scenarios requiring utilization of a wide variety of treatment resources.

Cost data for the "severe" category show that total costs range from \$1,293 to \$927,533 for males and \$1,293 to \$740,270 for females. Total direct costs range from \$126 to \$240,644 for males and \$126 to \$247,889 for females.

Analysis of costs by vaccine

The third analysis of the cost data generated by this study incorporates a review of the ranges of total costs associated with specific vaccines. This reaggregation of the cost data, which is summarized in Table I-7 cuts across medical events and across severity levels to generate an overall picture of the magnitude and range of costs estimated for all ill-

Table I-7
Costs by vaccine, for persons less than one year
assuming a discount rate of 2.5%

<i>Range of costs</i>						
<i>Total costs</i>		<i>Direct costs</i>		<i>Indirect costs</i>		
<i>Males</i> <i>(\$)</i>	<i>Females</i> <i>(\$)</i>	<i>Males</i> <i>(\$)</i>	<i>Females</i> <i>(\$)</i>	<i>Males</i> <i>(\$)</i>	<i>Females</i> <i>(\$)</i>	<i>Females</i> <i>(\$)</i>
DTP.....	95-891,963	95-705,384	95-205,075	95-213,003	0-686,888	0-492,381
Measles	1,313-927,533	1,313-740,270	1,313-240,644	1,313-247,889	0-686,888	0-492,381
Rubella.....	34-869,229	34-692,358	34-182,341	34-199,977	0-686,888	0-492,381
Influenza	11,405-922,461	11,405-734,197	11,405-235,573	11,405-241,816	0-686,888	0-492,381
Mumps.....	575-462,315	575-345,886	575- 26,905	575- 27,146	0-412,133	0-295,429
Polio.....	422-903,160	422-715,960	422-220,065	422-277,376	0-686,888	0-492,381

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ness or disability outcomes associated with the administration of a particular vaccine. Since such a large spectrum of illness or disability outcomes are specified for all vaccines, the resulting total cost ranges are extremely large.

Until realistic assumptions can be adopted about the relative frequency of the patient scenarios gen-

erating these cost ranges, little can be concluded about the aggregate costs associated with each vaccine. Despite these considerations, the total cost range estimated for illness or disability outcomes associated with mumps vaccine is notably lower than the costs identified for the other vaccines.

Conclusions

The analytical framework developed in this study enables the prediction of costs likely to be associated with the incidence of specific illnesses or injuries. This methodology also provides a convenient means of explicitly accounting for the many variables (e.g., severity and duration of acute phase of the medical event; nature, significance, and consequence of sequelae; age at which event is experienced) likely to affect the clinical and economic consequences associated with medical events.

The MEP construct provides a useful model for expressing both clinical and economic consequences of a variety of outcomes potentially associated with vaccination. Ultimately, they might provide a taxonomy for use in surveillance efforts directed towards adverse reactions to vaccines.

The specific MEPs provide *estimates* of clinical and economic outcomes of selected medical events. Both the CEPs and the RUPs were constructed on the basis of limited literature and clinical experience and, therefore, reflect a considerable degree of expert judgement, especially with regard to the specification of quantities of resources. Consequently, in some cases, most notably those where there is no reported occurrence of the medical event, the CEPs and RUPs are subject to error. Since Delphi techniques were employed to minimize errors due to spurious judgment, the information contained in the MEPs is useful in providing an estimate of the magnitude of per case costs and descriptions of potential reactions to particular vaccines. Nevertheless, the specific data contained in the MEPs should be interpreted—and used—with caution.

Due to the general dearth of adequate statistical information pertaining to cost data, standard errors—and therefore confidence intervals—were not available. Hence, it is difficult to ascertain the precision of the estimates. Thus, although these estimates serve to provide reasonable input as a basis to

estimate the economic costs of the selected medical events included in the scope of this study, these cost estimates should not be used beyond the purposes for which they were intended.

The numerical results generated in the performance of this research reflect predicted, not actual estimates of the economic costs of selected medical events known or suspected to be associated with the administration of common vaccines. Consequently, the cost estimates represent the *ex ante* (or predicted) economic cost of specific illnesses or injuries; these numbers are not intended for use in the settlement of liability cases where actual data are available. The determination of the *ex poste* (or actual) estimate of the economic cost of these events can be appropriately considered within the framework put forth in this study, but actual utilization and price data should replace our estimates of these variables.

Estimates of the direct and indirect costs of the selected medical events generated by this study represent a significant, necessary advancement towards the government's desire to evaluate quantitatively the liability it faces in the public administration of commonly used vaccines. Yet the estimates generated by this study are not yet ready to be incorporated into public policy development. As mentioned earlier, the per case cost estimates of each medical event exhibit variability that is correlated with the choice of discount rate. Thus, prior to the preparation of immunization liability cost estimates, a single discount rate must be agreed upon. Even then the cost estimates by themselves do not provide a sufficient basis for public policy development.

In order to estimate the magnitude of the liability that government stands to incur if it should decide to assume this responsibility, these unit cost estimates must be combined with incidence data that conform to the same taxonomy. In particular,

weighted sums computed by multiplying incidence data disaggregated by age, sex, and severity level of each outcome for each medical event by per case costs must be computed. This data must then be combined with information on the rates at which claims are filed and awarded, the availability of alternative forms of insurance coverage, and the administrative costs of the program.

In summary, the relevance of this study for future policy development is predicated on the fact that while PL 94-380 allowed the federal government to respond to the liability concerns of vaccine manufacturers, insurers, states, and providers, it did not

adequately address the risk faced by yet another group of program participants—the vaccinees. Adverse reactions to vaccines and their associated costs were highlighted by the widely publicized cases of Guillain-Barre during the Swine Flu Campaign. These concerns have motivated new focus for future national immunization policy development. In this research, estimates were developed of the direct and indirect per case costs of selected medical events known or suspected to be related to common vaccines. These estimates provide an important first step in quantifying the extent of the government's liability for such morbidity and mortality.

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Exhibits

Exhibit I-2

Anaphylaxis due to DTP Vaccine

I. Clinical profile *A. Etiology* Anaphylaxis, or Type I immunologic reaction, is the host's response to the interaction of an antigen with a fixed cytotoxic or cell-surface antibody. It is usually mediated by Immunoglobulin E. Initial exposure to various proteins, carbohydrates or simple chemicals (haptens) induces an antibody response. On re-exposure, an antigen-antibody interaction produces cellular response and damage. Pharmacologically active mediator substances are released. These mediators include histamine, kinins, slow reacting substance of anaphylaxis, serotonin, platelet activating factor, eosinophil chemotactic factor-A, prostaglandins, and activators of the complement system. These mediators in turn cause the clinical picture of anaphylaxis (1).

B. Clinical manifestations There are two major classes of anaphylactic reactions, local and systemic. Systemic reactions can be divided into two subclasses, respiratory and vascular.

Local anaphylaxis includes allergic rhinitis, some forms of asthma and local urticaria. It is usually benign and self-limited. Only local urticaria has been associated with parenteral vaccination.

Systemic anaphylaxis is characterized by urticaria, shock or respiratory distress. These may be preceded by a sense of uneasiness and apprehension, followed by nausea, diaphoresis, flushing, pruritis, headache and prostration. More protracted courses may include vomiting with hematemesis, diarrhea and fecal incontinence with hematochezia, abdominal cramps and urinary urgency. In the respiratory type, there is dyspnea due to bronchospasm or laryngeal edema. Cough, wheezing and cyanosis are associated symptoms with secondary hypoxia

leading to vascular collapse, coma or death. In vascular anaphylaxis there is primary circulatory collapse and shock.

Anaphylactic reactions can occur within seconds after exposure to an antigen. Death can occur within minutes. Most serious reactions occur within 12 hours of exposure. Fatal reactions usually begin within minutes of exposure. However, Barnard (2) reported a patient who had temporary nausea for minutes after a bee sting but became delirious and died suddenly 96 hours later. He concluded that "fatal anaphylactic reactions can be delayed for days."

The course of an anaphylactic reaction can range from rapid death to benign local reactions that subside spontaneously. Reactions can be modified by medical treatment (epinephrine, corticosteroids, antihistamines, intravenous fluids, etc.). Complications range from death or brain damage secondary to hypoxia and/or hypotension to mild discomfort without sequelae.

C. Epidemiology Present immunization recommendations by the Advisory Committee of Immunization Practices and the American Academy of Pediatrics are for DTP vaccine to be given to children between the ages of 6 weeks and 6 years (3). This defines the age group at risk. The incidence of anaphylactic reactions following DTP vaccine is difficult if not impossible to establish. In part, this is because a temporal relationship is not necessarily a causal one (see Differential Diagnosis). Most estimates have been retrospective and neither the population at risk nor the full clinical description is known.

Edsall (4) estimates "adverse reactions" to occur in 1 in 100,000 to 1 in 1,000,000 patients receiving any number of doses of DTP vaccine. Strom (5) estimates 32 reactions per 100,000 recipients. Most esti-

mates have been questioned because of the retrospective nature and poor screening of patients with purported reactions (6). Approximately one-half of all reactions are convulsions. Six to 32 percent are potentially anaphylactic responses. Few of these are of a serious nature. Newer vaccine preparations are more purified and may be associated with fewer side effects (7). Review of the literature reveals four cases of death that can tentatively be attributed to anaphylaxis (8,9). Most reports of shock-like reactions are associated with no sequelae. Cases of sudden infant death syndrome (S.I.D.S.) within 24 hours of immunization have been reported. Some of these could have been anaphylactic reactions. However, it has been argued that the incidence of this complication is no higher than the background incidence of SIDS (7). It is unlikely that anaphylactic reactions occur more frequently than 1 in 1,000,000 patients vaccinated and that fatal reactions occur in less than 10 percent of these.

D. Pathology The pathological expression of anaphylactic reactions correlates with the clinical presentation and secondary sequelae. Major findings are secondary to smooth muscle spasm and increased vascular permeability.

If there were respiratory symptoms, one finds laryngeal and upper respiratory tract edema, bronchospasm and secondary obstructive emphysema. If primary vascular collapse occurred, the pathologic examination will show visceral congestion secondary to increased vascular permeability. Acute right heart failure is often found. Occasionally eosinophilia of the liver, lung and spleen are noted (10).

E. Diagnosis History and physical examination rather than laboratory tests are of primary importance in the diagnosis of anaphylaxis. There is usually a close temporal relationship between exposure to DTP vaccine and the clinical symptoms of anaphylaxis. Objective signs of respiratory distress such as stridor or wheezing may be noted. Increased pulse rate and decreased blood pressure may also be found. Blood gases should be obtained but are not diagnostic. Occasionally increased serum concentrations of IgE are present. EKG abnormalities are occasionally noted including arrhythmias, ST segment elevation or depression, and T-wave flattening or inversion (11).

F. Differential diagnosis As already noted, it is difficult to establish the reliability of the diagnosis in many reactions reported in the literature because of

incomplete clinical histories. Frequently the best one can do is to state that a given reaction is consistent with anaphylaxis. It may also be consistent with other diagnoses (i.e., encephalopathy, SIDS, etc.).

England's Joint Committee on Vaccination and Immunization reviewed DTP vaccine and concluded that, "the sudden onset of collapse . . . may be attributed to the vaccine . . . as they do not appear to have been observed after other prophylactics given at the same age, or in children who have been given no vaccine." (6) However, whether these shock-like reactions are anaphylactic in nature is moot. The Morbidity and Mortality Weekly Report states: "Vaccines, such as . . . DTP . . . that are derived from organisms grown in synthetic media are frequently associated with local and occasionally systemic side effects, but they do not appear to be allergenic *per se*" (12). Edsall notes that shock may represent a pharmacologic reaction related to adrenergic block as is seen experimentally in mice after Pertussis Vaccine injection (4). Pertussis Vaccine induced hypoglycemia can mimic vascular collapse and is important to differentiate for therapeutic reasons (13).

Anaphylactoid reactions can easily be confused with anaphylaxis. They are secondary to direct release of chemical mediators (i.e., histamine) without prior sensitization to the offending substance and without an antigen-antibody interaction. Clinical symptoms mimic those of anaphylaxis. Reactions to the first dose of DTP vaccine that are consistent with anaphylaxis are probably anaphylactoid.

Inadvertent intravenous administration of DTP vaccine could lead to a severe reaction that would mimic anaphylaxis and result in sudden collapse. Inappropriate storage of DTP vaccine with or without bacterial contamination could account for further reactions that might appear similar to anaphylactic reactions (7). Sudden Infant Death Syndrome (SIDS) has already been mentioned as another cause of death that might be attributed to anaphylaxis. Temporally related infections (croup, epiglottitis, etc.) could mimic anaphylactic symptoms, although they would differ markedly on pathological examination. Encephalopathy, another manifestation of DTP vaccine, may also be confused with anaphylaxis. Clinical course, fever, and cerebrospinal fluid findings should help to differentiate this entity. Not all case reports have included sufficient data to clearly define the type of vaccine reaction. Anaphylactic response to the tetanus or diphtheria compo-

nent of the vaccine is apparently less common than allergic responses to the pertussis component (14).

G. Outcomes Although, theoretically, hypoxic brain damage can occur from anaphylaxis, it has not been reported. Madsen and Werne, and Garrow each describe two infants who died after receiving Pertussis vaccine (8,9). The clinical histories are compatible with anaphylaxis and in the latter report it is confirmed pathologically. The outcome most frequently reported is full recovery.

With modern resuscitative techniques one can predict increased survival from anaphylaxis while expecting a small percentage of the survivors to suffer hypoxic brain damage of variable degree.

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EXHIBIT I-3 Clinical event profile for anaphylaxis

Local anaphylaxis
due to
DTP vaccine

Mild disease

1. Urticaria at injection site (local)

All benign and self-limited
with Complete Recovery

Systemic anaphylaxis
due to
DTP vaccine

Mild disease

1. Urticaria (generalized)
2. Respiratory distress

Subside spontaneously/
Full recovery (within
minutes to 12 hours)

Onset within seconds to 12 hours of exposure. Outcomes may be preceded by a sense of uneasiness and apprehension followed by nausea, diaphoresis, flushing, pruritis, headache, and prostration.

Progression to or presenting as moderate disease

May be characterized by vomiting with hematemesis, diarrhea, and fecal incontinence with hematochezia, abdominal cramps, and urinary urgency. In the respiratory type there is dyspnea due to bronchospasm or laryngeal edema.

3. Shock with full recovery
4. Severe respiratory distress

Progression to or presenting as severe disease

Can include cough, wheezing, and cyanosis associated with secondary hypoxia.

5. Brain damage. secondary to hypoxia and/or hypotension (may result in mental retardation).

6. Death

* Identified by consulting physicians as the most likely outcome.

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EXHIBIT I-4 Resource utilization profile

1. Mild Local Anaphylaxis due to DTP Vaccine resulting in Urticaria with Complete Recovery.

Patient Scenario: Patient experiences a mild anaphylactic reaction characterized by urticaria lasting for 2 days followed by complete recovery. (Patient ages range from 6 weeks to 6 years.)

Degree of Impairment: None.

Acute Inpatient Utilization: None.

Outpatient Utilization: 1 physician visit to Pediatrician.

Chronic Inpatient Utilization: None.

Resource utilization profile

1. Mild Systemic Anaphylaxis due to DTP Vaccine Resulting in Urticaria.

Patient Scenario: Patient experiences mild anaphylactic reaction characterized by an attack of urticaria lasting 12 hours and resulting in full recovery. (Patient ages range from 6 weeks to 6 years.)

Degree of Impairment: None.

Acute Inpatient Utilization: None.

Outpatient Utilization: 1 physician office visit to Pediatrician.

Chronic Inpatient Utilization: None.

Resource utilization profile

2. Mild Systemic Anaphylaxis due to DTP Vaccine resulting in Respiratory Distress.

Patient Scenario: Patient experiences mild anaphylactic reaction characterized by a mild attack of respiratory distress which lasts 2 hours and results in complete recovery. (Patients are between the ages of 6 weeks and 6 years.)

Acute Inpatient Utilization: None.

Outpatient Utilization:

- Emergency department visit.
- 1 physician office visit with Pediatrician.
- Drug Therapy:
Epinephrine.
Antihistamines.

Chronic Inpatient Utilization: None.

Resource utilization profile

3. Moderate Systemic Anaphylaxis due to DTP Vaccine resulting in Shock.

Patient Scenario: Patient experiences moderate anaphylaxis resulting in shock. Recovery is complete within a period of 2 days. (Patient ages range from 6 weeks to 6 years.)

Degree of Impairment: 100 percent for 2 days. (Estimate based on category of Mental Deterioration, Pronounced, which is rated 100 percent in the Labor Code of the State of California.)

Acute Inpatient Utilization:

- Admission to the Emergency Department via paramedic rescue.
- Length of Stay: 2 days. (Estimate based on severity of disease. Average length of stay is 2.2 days with a Standard Deviation of 2.0 and a Range of 6.0. The Median is 1.0 days.)*
- 2 consults with Pediatrician.
- 1 consult with Infectious Disease Specialist.
- Attending physician visits daily: Pediatrician.
- Intensive Care for 1 day, then Routine Care for 1 day.
- Special Equipment:
 - Respirator.
- Drug Therapy:
 - Corticosteroids.
 - Antihistamines.
 - Epinephrine.
 - Intravenous Fluids.

Outpatient Utilization:

- 1 office visit to Pediatrician.

Chronic Inpatient Utilization: None.

Resource utilization profile

4. Moderate Systemic Anaphylaxis due to DTP Vaccine resulting in Severe Respiratory Distress with Full Recovery.

Patient Scenario: Patient experiences moderate anaphylaxis resulting in severe respiratory distress. Recovery is complete within a period of 3 days. (Patient ages range from 6 weeks to 6 years.)

Degree of Impairment: 100 percent for 3 days. (Estimate based on category of Chronic Affections of the Pulmonary Tissues, Pronounced, which is rated 100 percent in the Labor Code of the State of California.)

Acute Inpatient Utilization:

- Admission to the Emergency Department via paramedic rescue for resuscitation.
- Length of Stay: 5 days. (Estimate based on severity of disease. Average length of stay is 2.2 days with a Standard Deviation of 2.0 days and a Range of 6.0. The Median is 1.0 days.)*
- Intensive Care for 2 days, then routine care for 3 days.
- 1 consult with a Pediatric Pulmonary Disease Specialist.
- 1 consult with Infectious Disease Specialist.
- Attending physician visits daily: Pediatrician.
- Drug Therapy:
 - Corticosteroids.
 - Antihistamines.
 - Epinephrine.
 - Intravenous Fluids.

Outpatient Utilization:

- 1 office visit to a Pediatrician.

Chronic Inpatient Utilization: None.

Resource utilization profile

5. Severe Systemic Anaphylaxis due to DTP Vaccine resulting in Brain Damage.

Patient Scenario: Patient experiences severe anaphylactic reaction resulting in brain damage secondary to hypoxia and/or hypotension. Permanent mental retardation follows. (Patient ages range from 6 weeks to 6 years.)

Degree of Impairment: 75 percent for life. (Estimate based on category of Severe Mental Deterioration which is rated 75 percent in the Labor Code of the State of California.)

Acute Inpatient Utilization:

- Admission to the Emergency Department via paramedic rescue for resuscitation.
- Length of Stay: 21 days. (Estimate based on severity of disease. Average length of stay is 2.2 days with a Standard Deviation of 2.0 days and a Range of 6.0. The Median is 1.0 days.)*

- Intensive Care for 5 days, then routine care for duration of length of stay.
- 1 consult with a Respiratory Specialist.
- 1 consult with Infectious Disease Specialist.
- 1 consult with an Allergist.
- 3 consults with a Neurologist.
- Attending physician visits daily: Pediatrician.
- Respiratory Therapy:
 - Mechanical ventilation for 2 days.
 - Intermittent Positive Pressure Breathing (IPPB) 2 times per day for one week.
- Physical Therapy/Occupational Therapy:
 - Postural Drainage 2 times per day for one week.
 - Diversional and play activities by Occupational Therapist daily for duration of length of stay.

* As is explained more fully in the text of the full report, the LOS is estimated on the basis of CHAMP data for the period 1976-78. In this particular case, it should be noted that the severity of the disease resulted in the LOS estimate being substantially greater than the LOS indicated in the records of patients (with less severe outcomes) comprising the CHAMP files.

Resource utilization profile

- Drug Therapy:
 - Corticosteroids.
 - Antihistamines.
 - Epinephrine.
 - Intravenous fluids.

Outpatient Utilization:

- Physician office visits to Pediatrician 1 time per month for 6 months, then 2 times per year until age 18, then 1 visit to Primary Care Specialist per year for life.
- Special schooling for the mentally retarded (including Speech Therapy 2 times per week) until age 15.
- Occupational Therapy including family instruction and child instruction in self care, dressing and feeding, 1 time per week for 1 month.
- Physical Therapy 2 times per week for gait training, exercise, and family instruction for 3 months.
- Visiting nurse home visits 1 time per month for 1 year.

Chronic Inpatient Utilization:

- Domiciliary facility from age 15 to life.

Resource utilization profile

6. Severe Systemic Anaphylaxis due to DTP Vaccine resulting in Death.

Patient Scenario: Patient experiences severe anaphylactic reaction resulting in death. (Patients are between the ages of 6 weeks and 6 years.)

Degree of Impairment: 100 percent until death. (Estimate based on category of Pronounced Mental Deterioration which is rated 100 percent in the Labor Code of the State of California.)

Acute Inpatient Utilization:

- Admission to the Emergency Room via paramedic rescue.
- Efforts to resuscitate patient are unsuccessful in Emergency Room.

Outpatient Utilization:

- Parental follow-up and counseling (10 visits).
-

Exhibit i-5
Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct costs summary
(2.5% discount rate)

<i>Males</i>											
	<i>Hospital care</i>	<i>Physician fees</i>		<i>Drugs</i>	<i>Home modificat.</i>	<i>Physical & occup. therapy</i>	<i>Spec. ed. and sp. ther.</i>	<i>Long-term care</i>	<i>Home care</i>	<i>Equipment</i>	<i>Total direct costs</i>
		<i>Inpatient</i>	<i>Outpatient</i>								
<1	12000.	2362.	2902.	0.	4000.	11027.	6707.	6336.	13599.	37988.	96920.
1-2	9060.	2362.	2877.	0.	4000.	11027.	6968.	6336.	13488.	37675.	93793.
3-4	9060.	2362.	2842.	0.	4000.	11027.	7759.	6336.	13328.	37225.	93940.
5-9	9060.	2362.	2774.	0.	4000.	11027.	8885.	6336.	13021.	36358.	93823.
10-14	9060.	2362.	2667.	0.	4000.	11027.	6108.	6336.	12534.	34986.	89080.
15-19	9103.	2397.	2557.	0.	4000.	11027.	2374.	6336.	12033.	33573.	83400.
20-24	9103.	2397.	2442.	0.	4000.	11027.	192.	6336.	11508.	32091.	79095.
25-29	9103.	2397.	2310.	0.	4000.	11027.	0.	6336.	10909.	30404.	76486.
30-34	9103.	2397.	2159.	0.	4000.	11027.	0.	6336.	10225.	28473.	73720.
35-39	9103.	2397.	1993.	0.	4000.	11027.	0.	6336.	9469.	26343.	70668.
40-44	9103.	2397.	1815.	0.	4000.	11027.	0.	6336.	8660.	24059.	67397.
45-49	9103.	2397.	1629.	0.	4000.	11027.	0.	6336.	7816.	21681.	63989.
50-54	9103.	2397.	1441.	0.	4000.	11027.	0.	6336.	6958.	19260.	60522.
55-59	9103.	2397.	1253.	0.	4000.	11027.	0.	6336.	6105.	16854.	57075.
60-64	9103.	2397.	1075.	0.	4000.	11027.	0.	6336.	5294.	14569.	53801.
65-69	8640.	2397.	903.	0.	4000.	11027.	0.	6336.	4517.	12376.	50196.
70-74	8640.	2397.	749.	0.	4000.	11027.	0.	6336.	3814.	10396.	47359.
75-79	8640.	2397.	618.	0.	4000.	11027.	0.	6336.	3218.	8714.	44950.
80-84	8640.	2397.	507.	0.	4000.	11027.	0.	6336.	2715.	7295.	42918.
85+	8640.	2397.	367.	0.	4000.	11027.	0.	6336.	2077.	5495.	40338.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct costs summary
(2.5% discount rate)

<i>Females</i>											
	<i>Hospital care</i>	<i>Physician fees</i>		<i>Drugs</i>	<i>Home modificat.</i>	<i>Physical & occup. therapy</i>	<i>Spec. ed. and sp. ther.</i>	<i>Long-term care</i>	<i>Home care</i>	<i>Equipment</i>	<i>Total direct costs</i>
		<i>Inpatient</i>	<i>Outpatient</i>								
<1	12000.	2362.	3034.	0.	4000.	11027.	6717.	6336.	14202.	39688.	99366.
1-2	9060.	2362.	3014.	0.	4000.	11027.	6978.	6336.	14112.	39434.	96323.
3-4	9060.	2362.	2986.	0.	4000.	11027.	7768.	6336.	13982.	39067.	96587.
5-9	9060.	2362.	2930.	0.	4000.	11027.	8891.	6336.	13728.	38352.	96686.
10-14	9060.	2362.	2841.	0.	4000.	11027.	6112.	6336.	13324.	37214.	92276.
15-19	9103.	2397.	2744.	0.	4000.	11027.	2374.	6336.	12882.	35968.	86831.
20-24	9103.	2397.	2636.	0.	4000.	11027.	192.	6336.	12392.	34586.	82669.
25-29	9103.	2397.	2515.	0.	4000.	11027.	0.	6336.	11841.	33030.	80249.
30-34	9103.	2397.	2379.	0.	4000.	11027.	0.	6336.	11225.	31294.	77762.
35-39	9103.	2397.	2231.	0.	4000.	11027.	0.	6336.	10548.	29386.	75028.
40-44	9103.	2397.	2070.	0.	4000.	11027.	0.	6336.	9818.	27327.	72079.
45-49	9103.	2397.	1899.	0.	4000.	11027.	0.	6336.	9040.	25133.	68934.
50-54	9103.	2397.	1717.	0.	4000.	11027.	0.	6336.	8216.	22807.	65603.
55-59	9103.	2397.	1528.	0.	4000.	11027.	0.	6336.	7355.	20381.	62127.
60-64	9103.	2397.	1334.	0.	4000.	11027.	0.	6336.	6472.	17889.	58558.
65-69	8640.	2397.	1131.	0.	4000.	11027.	0.	6336.	5550.	15291.	54372.
70-74	8640.	2397.	937.	0.	4000.	11027.	0.	6336.	4671.	12811.	50819.
75-79	8640.	2397.	767.	0.	4000.	11027.	0.	6336.	3896.	10626.	47689.
80-84	8640.	2397.	624.	0.	4000.	11027.	0.	6336.	3246.	8792.	45062.
85+	8640.	2397.	447.	0.	4000.	11027.	0.	6336.	2443.	6527.	41817.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct costs summary
(6.0% discount rate)

Males

	Hospital care	Physician fees		Drugs	Home modificat.	Physical & occup. therapy	Spec. ed. and sp. ther.	Long-term care	Home care	Equipment	Total direct costs
		Inpatient	Outpatient								
<1	12000.	2362.	1525.	0.	4000.	11027.	4889.	6336.	7343.	20346.	69828.
1-2	9060.	2362.	1522.	0.	4000.	11027.	5344.	6336.	7328.	20303.	67281.
3-4	9060.	2362.	1516.	0.	4000.	11027.	6441.	6336.	7303.	20232.	68278.
5-9	9060.	2362.	1504.	0.	4000.	11027.	8106.	6336.	7246.	20074.	69715.
10-14	9060.	2362.	1482.	0.	4000.	11027.	5898.	6336.	7144.	19786.	67094.
15-19	9103.	2397.	1458.	0.	4000.	11027.	2370.	6336.	7037.	19484.	63212.
20-24	9103.	2397.	1432.	0.	4000.	11027.	192.	6336.	6921.	19157.	60565.
25-29	9103.	2397.	1398.	0.	4000.	11027.	0.	6336.	6766.	18719.	59746.
30-34	9103.	2397.	1352.	0.	4000.	11027.	0.	6336.	6555.	18125.	58896.
35-39	9103.	2397.	1293.	0.	4000.	11027.	0.	6336.	6289.	17374.	57819.
40-44	9103.	2397.	1223.	0.	4000.	11027.	0.	6336.	5967.	16467.	56520.
45-49	9103.	2397.	1141.	0.	4000.	11027.	0.	6336.	5595.	15416.	55014.
50-54	9103.	2397.	1049.	0.	4000.	11027.	0.	6336.	5176.	14235.	53322.
55-59	9103.	2397.	948.	0.	4000.	11027.	0.	6336.	4719.	12947.	51477.
60-64	9103.	2397.	845.	0.	4000.	11027.	0.	6336.	4249.	11622.	49579.
65-69	8640.	2397.	737.	0.	4000.	11027.	0.	6336.	3759.	10240.	47135.
70-74	8640.	2397.	632.	0.	4000.	11027.	0.	6336.	3283.	8898.	45213.
75-79	8640.	2397.	538.	0.	4000.	11027.	0.	6336.	2855.	7691.	43484.
80-84	8640.	2397.	455.	0.	4000.	11027.	0.	6336.	2477.	6623.	41954.
85+	8640.	2397.	341.	0.	4000.	11027.	0.	6336.	1958.	5160.	39858.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct costs summary
(6.0% discount rate)

Females

	Hospital care	Physician fees		Drugs	Home modificat.	Physical & occup. therapy	Spec. ed. and sp. ther.	Long-term care	Home care	Equipment	Total direct costs
		Inpatient	Outpatient								
<1	12000.	2362.	1546.	0.	4000.	11027.	4896.	6336.	7437.	20610.	70214.
1-2	9060.	2362.	1544.	0.	4000.	11027.	5351.	6336.	7429.	20588.	67697.
3-4	9060.	2362.	1541.	0.	4000.	11027.	6447.	6336.	7415.	20549.	68737.
5-9	9060.	2362.	1534.	0.	4000.	11027.	8110.	6336.	7381.	20454.	70264.
10-14	9060.	2362.	1520.	0.	4000.	11027.	5901.	6336.	7318.	20277.	67801.
15-19	9103.	2397.	1503.	0.	4000.	11027.	2370.	6336.	7243.	20064.	64043.
20-24	9103.	2397.	1483.	0.	4000.	11027.	192.	6336.	7149.	19798.	61484.
25-29	9103.	2397.	1455.	0.	4000.	11027.	0.	6336.	7025.	19448.	60791.
30-34	9103.	2397.	1420.	0.	4000.	11027.	0.	6336.	6865.	18998.	60146.
35-39	9103.	2397.	1376.	0.	4000.	11027.	0.	6336.	6665.	18434.	59338.
40-44	9103.	2397.	1323.	0.	4000.	11027.	0.	6336.	6423.	17752.	58360.
45-49	9103.	2397.	1259.	0.	4000.	11027.	0.	6336.	6135.	16939.	57196.
50-54	9103.	2397.	1184.	0.	4000.	11027.	0.	6336.	5793.	15976.	55817.
55-59	9103.	2397.	1097.	0.	4000.	11027.	0.	6336.	5397.	14860.	54217.
60-64	9103.	2397.	998.	0.	4000.	11027.	0.	6336.	4947.	13589.	52398.
65-69	8640.	2397.	882.	0.	4000.	11027.	0.	6336.	4420.	12104.	49807.
70-74	8640.	2397.	761.	0.	4000.	11027.	0.	6336.	3869.	10549.	47579.
75-79	8640.	2397.	646.	0.	4000.	11027.	0.	6336.	3346.	9073.	45465.
80-84	8640.	2397.	543.	0.	4000.	11027.	0.	6336.	2878.	7754.	43575.
85+	8640.	2397.	406.	0.	4000.	11027.	0.	6336.	2254.	5996.	41056.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct costs summary
(10.0% discount rate)

Males

	Hospital care	Physician fees		Drugs	Home modificat.	Physical & occup. therapy	Spec. ed. and sp. ther.	Long-term care	Home care	Equipment	Total direct costs
		Inpatient	Outpatient								
<1	12000.	2362.	984.	0.	4000.	11027.	3511.	6336.	4881.	13403.	58504.
1-2	9060.	2362.	983.	0.	4000.	11027.	4060.	6336.	4879.	13397.	56104.
3-4	9060.	2362.	982.	0.	4000.	11027.	5348.	6336.	4874.	13383.	57372.
5-9	9060.	2362.	979.	0.	4000.	11027.	7415.	6336.	4859.	13341.	59379.
10-14	9060.	2362.	972.	0.	4000.	11027.	5692.	6336.	4828.	13253.	57529.
15-19	9103.	2397.	965.	0.	4000.	11027.	2365.	6336.	4798.	13169.	54161.
20-24	9103.	2397.	959.	0.	4000.	11027.	192.	6336.	4770.	13091.	51876.
25-29	9103.	2397.	950.	0.	4000.	11027.	0.	6336.	4727.	12968.	51508.
30-34	9103.	2397.	934.	0.	4000.	11027.	0.	6336.	4655.	12767.	51219.
35-39	9103.	2397.	911.	0.	4000.	11027.	0.	6336.	4552.	12477.	50803.
40-44	9103.	2397.	881.	0.	4000.	11027.	0.	6336.	4414.	12088.	50246.
45-49	9103.	2397.	843.	0.	4000.	11027.	0.	6336.	4240.	11595.	49540.
50-54	9103.	2397.	796.	0.	4000.	11027.	0.	6336.	4026.	10992.	48677.
55-59	9103.	2397.	740.	0.	4000.	11027.	0.	6336.	3773.	10280.	47656.
60-64	9103.	2397.	679.	0.	4000.	11027.	0.	6336.	3496.	9496.	46534.
65-69	8640.	2397.	610.	0.	4000.	11027.	0.	6336.	3183.	8614.	44807.
70-74	8640.	2397.	539.	0.	4000.	11027.	0.	6336.	2858.	7699.	43496.
75-79	8640.	2397.	471.	0.	4000.	11027.	0.	6336.	2550.	6831.	42253.
80-84	8640.	2397.	408.	0.	4000.	11027.	0.	6336.	2266.	6031.	41105.
85 +	8640.	2397.	316.	0.	4000.	11027.	0.	6336.	1847.	4848.	39412.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct costs summary
(10.0% discount rate)

Females

	Hospital care	Physician fees		Drugs	Home modificat.	Physical & occup. therapy	Spec. ed. and sp. ther.	Long-term care	Home care	Equipment	Total direct costs
		Inpatient	Outpatient								
<1	12000.	2362.	988.	0.	4000.	11027.	3516.	6336.	4902.	13462.	58592.
1-2	9060.	2362.	988.	0.	4000.	11027.	4065.	6336.	4902.	13462.	56202.
3-4	9060.	2362.	988.	0.	4000.	11027.	5353.	6336.	4901.	13459.	57485.
5-9	9060.	2362.	987.	0.	4000.	11027.	7419.	6336.	4895.	13442.	59527.
10-14	9060.	2362.	984.	0.	4000.	11027.	5694.	6336.	4881.	13403.	57747.
15-19	9103.	2397.	980.	0.	4000.	11027.	2365.	6336.	4864.	13357.	54430.
20-24	9103.	2397.	975.	0.	4000.	11027.	192.	6336.	4843.	13296.	52169.
25-29	9103.	2397.	968.	0.	4000.	11027.	0.	6336.	4810.	13204.	51845.
30-34	9103.	2397.	957.	0.	4000.	11027.	0.	6336.	4762.	13068.	51650.
35-39	9103.	2397.	943.	0.	4000.	11027.	0.	6336.	4695.	12878.	51378.
40-44	9103.	2397.	923.	0.	4000.	11027.	0.	6336.	4606.	12627.	51019.
45-49	9103.	2397.	898.	0.	4000.	11027.	0.	6336.	4490.	12302.	50553.
50-54	9103.	2397.	865.	0.	4000.	11027.	0.	6336.	4341.	11881.	49949.
55-59	9103.	2397.	823.	0.	4000.	11027.	0.	6336.	4152.	11347.	49185.
60-64	9103.	2397.	772.	0.	4000.	11027.	0.	6336.	3917.	10685.	48237.
65-69	8640.	2397.	704.	0.	4000.	11027.	0.	6336.	3611.	9822.	46537.
70-74	8640.	2397.	627.	0.	4000.	11027.	0.	6336.	3261.	8835.	45124.
75-79	8640.	2397.	549.	0.	4000.	11027.	0.	6336.	2906.	7833.	43687.
80-84	8640.	2397.	475.	0.	4000.	11027.	0.	6336.	2569.	6883.	42326.
85 +	8640.	2397.	369.	0.	4000.	11027.	0.	6336.	2086.	5522.	40377.

Patient profile: 43 severe Guillain Barre/Influenza vaccine (respiratory insufficiency)
Indirect costs

Males									
	Earning loss yr 0			P. V. lifetime earnings loss			Total earnings loss		
	Duration of work loss	Loss in fiscal earnings	Percent disability	Discount rate 2.5%	Discount rate 6.0%	Discount rate 10.0%	Discount rate 2.5%	Discount rate 6.0%	Discount rate 10.0%
<1	260.	0.	100.	686888.	189363.	55096.	686888.	189363.	55096.
1-2	260.	0.	100.	681317.	189889.	55646.	681317.	189889.	55646.
3-4	260.	0.	100.	681317.	189889.	55646.	681317.	189889.	55646.
5-9	260.	0.	100.	696011.	230248.	81497.	696011.	230248.	81497.
10-14	260.	0.	100.	713968.	280845.	120063.	713968.	280845.	120063.
15-19	260.	2200.	100.	730788.	337678.	171708.	732988.	339878.	173908.
20-24	260.	9172.	100.	727810.	385220.	223786.	736982.	394392.	232958.
25-29	260.	17768.	100.	686453.	401588.	254369.	704221.	419356.	272137.
30-34	260.	21354.	100.	611819.	386033.	258778.	633173.	407387.	280132.
35-39	260.	22754.	100.	522865.	353262.	249239.	545619.	376016.	271993.
40-44	260.	23696.	100.	427290.	308378.	229281.	450986.	332074.	252977.
45-49	260.	24396.	100.	327547.	251599.	197148.	351943.	275995.	221544.
50-54	260.	22859.	100.	229638.	186799.	153926.	252497.	209658.	176785.
55-59	260.	19927.	100.	141677.	121640.	105472.	161604.	141567.	125399.
60-64	260.	15735.	100.	69018.	61911.	56236.	84753.	77646.	71971.
65-69	260.	5213.	100.	25916.	22966.	20522.	31129.	28179.	25735.
70-74	260.	2717.	100.	11741.	10591.	9626.	14458.	13308.	12343.
75-79	260.	1403.	100.	5203.	4781.	4415.	6606.	6184.	5818.
80-84	260.	727.	100.	2334.	2193.	2063.	3061.	2920.	2790.
85+	260.	371.	100.	893.	892.	893.	1264.	1263.	1264.

Patient profile: 43 severe Guillain Barre/Influenza vaccine (respiratory insufficiency)
Indirect costs

Females									
	Earning loss yr 0			P. V. lifetime earnings loss			Total earnings loss		
	Duration of work loss	Loss in fiscal earnings	Percent disability	Discount rate 2.5%	Discount rate 6.0%	Discount rate 10.0%	Discount rate 2.5%	Discount rate 6.0%	Discount rate 10.0%
<1	260.	0.	100.	492381.	140891.	43601.	492381.	140891.	43601.
1-2	260.	0.	100.	497307.	142327.	44216.	497307.	142327.	44216.
3-4	260.	0.	100.	497307.	142327.	44216.	497307.	142327.	44216.
5-9	260.	0.	100.	504945.	172637.	64788.	504945.	172637.	64788.
10-14	260.	0.	100.	518016.	210299.	95335.	518016.	210299.	95335.
15-19	260.	2413.	100.	525698.	250271.	134318.	528111.	252684.	136731.
20-24	260.	9059.	100.	511998.	275606.	166623.	521057.	284665.	175682.
25-29	260.	14873.	100.	466031.	271505.	175397.	480904.	286378.	190270.
30-34	260.	14910.	100.	404313.	249545.	166865.	419223.	264455.	181775.
35-39	260.	14819.	100.	341483.	222948.	154788.	356302.	237767.	169607.
40-44	260.	14129.	100.	279804.	193262.	139701.	293933.	207391.	153830.
45-49	260.	13773.	100.	220161.	161002.	121765.	233934.	174775.	135538.
50-54	260.	13023.	100.	162575.	125524.	99428.	175598.	138547.	112451.
55-59	260.	11858.	100.	108789.	88108.	72925.	120647.	99966.	84783.
60-64	260.	9321.	100.	62942.	52605.	44879.	72263.	61926.	54200.
65-69	260.	4664.	100.	32970.	27790.	23757.	37634.	32454.	28421.
70-74	260.	2971.	100.	17991.	15613.	13680.	20962.	18584.	16651.
75-79	260.	1894.	100.	9067.	8106.	7287.	10961.	10000.	9181.
80-84	260.	1084.	100.	4381.	4054.	3752.	5465.	5138.	4836.
85+	260.	643.	100.	1731.	1731.	1731.	2374.	2374.	2374.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Indirect/direct cost comparison

	2.5%				6.0%				10.0%			
	Direct		Indirect		Direct		Indirect		Direct		Indirect	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
<1 ...	96920.	99366.	686888.	492381.	69828.	70214.	189363.	140891.	58504.	58592.	55096.	43601.
1-2 ...	93793.	96323.	681317.	497307.	67281.	67697.	189889.	142327.	56104.	56202.	55646.	44216.
3-4 ...	93940.	96587.	681317.	497307.	68278.	68737.	189889.	142327.	57372.	57485.	55646.	44216.
5-9 ...	93823.	96686.	696011.	504945.	69715.	70264.	230248.	172637.	59379.	59527.	81497.	64788.
10-14 ...	89080.	92276.	713968.	518016.	67094.	67801.	280845.	210299.	57529.	57747.	120063.	95335.
15-19 ...	83400.	86831.	732988.	528111.	63212.	64043.	339878.	252684.	54161.	54430.	173908.	136731.
20-24 ...	79095.	82669.	736982.	521057.	60565.	61484.	394392.	284665.	51876.	52169.	232958.	175682.
25-29 ...	76486.	80249.	704221.	480904.	59746.	60791.	419356.	286378.	51508.	51845.	272137.	190270.
30-34 ...	73720.	77762.	633173.	419223.	58896.	60146.	407387.	264455.	51219.	51650.	280132.	181775.
35-39 ...	70668.	75028.	545619.	356302.	57819.	59338.	376016.	237767.	50803.	51378.	271993.	169607.
40-44 ...	67397.	72079.	450986.	293933.	56520.	58360.	332074.	207391.	50246.	51019.	252977.	153830.
45-49 ...	63989.	68934.	351943.	233934.	55014.	57196.	275995.	174775.	49540.	50553.	221544.	135538.
50-54 ...	60522.	65603.	252497.	175598.	53322.	55817.	209658.	138547.	48677.	49949.	176785.	112451.
55-59 ...	57075.	62127.	161604.	120647.	51477.	54217.	141567.	99966.	47656.	49185.	125399.	84783.
60-64 ...	53801.	58558.	84753.	72263.	49579.	52398.	77646.	61926.	46534.	48237.	71971.	54200.
65-69 ...	50196.	54372.	31129.	37634.	47135.	49807.	28179.	32454.	44807.	46537.	25735.	28421.
70-74 ...	47359.	50819.	14458.	20962.	45213.	47579.	13308.	18584.	43496.	45124.	12343.	16651.
75-79 ...	44950.	47689.	6606.	10961.	43484.	45465.	6184.	10000.	42253.	43687.	5818.	9181.
80-84 ...	42918.	45062.	3061.	5465.	41954.	43575.	2920.	5138.	41105.	42326.	2790.	4836.
85 + ...	40338.	41817.	1264.	2374.	39858.	41056.	1263.	2374.	39412.	40377.	1264.	2374.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Total costs

	Males			Females		
	2.5%	6.0%	10.0%	2.5%	6.0%	10.0%
<1	783808.	259191.	113600.	591747.	211105.	102193.
1-2	775110.	257170.	111750.	593630.	210023.	100418.
3-4	775257.	258166.	113018.	593895.	211063.	101701.
5-9	789835.	299963.	140876.	601631.	242901.	124315.
10-14	803049.	347939.	177592.	610292.	278099.	153081.
15-19	816389.	403090.	228069.	614942.	316727.	191160.
20-24	816077.	454957.	284834.	603727.	346149.	227851.
25-29	780706.	479101.	323645.	561153.	347169.	242115.
30-34	706893.	466283.	331351.	496985.	324602.	233425.
35-39	616287.	433835.	322796.	431330.	297105.	220985.
40-44	518382.	388594.	303222.	366011.	265752.	204848.
45-49	415933.	331009.	271084.	302869.	231970.	186091.
50-54	313019.	262980.	225462.	241200.	194364.	162401.
55-59	218679.	193043.	173055.	182774.	154183.	133968.
60-64	138554.	127225.	118505.	130821.	114324.	102437.
65-69	81325.	75315.	70542.	92005.	82261.	74958.
70-74	61817.	58521.	55839.	71781.	66163.	61775.
75-79	51557.	49668.	48070.	58650.	55465.	52868.
80-84	45978.	44874.	43895.	50527.	48713.	47163.
85 +	41602.	41121.	40675.	44190.	43430.	42751.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: hospital care

Males							
Age	Cost in yrs 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	12000.	0.	0.	0.	12000.	12000.	12000.
1-2	9060.	0.	0.	0.	9060.	9060.	9060.
3-4	9060.	0.	0.	0.	9060.	9060.	9060.
5-9	9060.	0.	0.	0.	9060.	9060.	9060.
10-14	9060.	0.	0.	0.	9060.	9060.	9060.
15-19	9103.	0.	0.	0.	9103.	9103.	9103.
20-24	9103.	0.	0.	0.	9103.	9103.	9103.
25-29	9103.	0.	0.	0.	9103.	9103.	9103.
30-34	9103.	0.	0.	0.	9103.	9103.	9103.
35-39	9103.	0.	0.	0.	9103.	9103.	9103.
40-44	9103.	0.	0.	0.	9103.	9103.	9103.
45-49	9103.	0.	0.	0.	9103.	9103.	9103.
50-54	9103.	0.	0.	0.	9103.	9103.	9103.
55-59	9103.	0.	0.	0.	9103.	9103.	9103.
60-64	9103.	0.	0.	0.	9103.	9103.	9103.
65-69	8640.	0.	0.	0.	8640.	8640.	8640.
70-74	8640.	0.	0.	0.	8640.	8640.	8640.
75-79	8640.	0.	0.	0.	8640.	8640.	8640.
80-84	8640.	0.	0.	0.	8640.	8640.	8640.
85+	8640.	0.	0.	0.	8640.	8640.	8640.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: hospital care

Females							
Age	Cost in yrs 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	12000.	0.	0.	0.	12000.	12000.	12000.
1-2	9060.	0.	0.	0.	9060.	9060.	9060.
3-4	9060.	0.	0.	0.	9060.	9060.	9060.
5-9	9060.	0.	0.	0.	9060.	9060.	9060.
10-14	9060.	0.	0.	0.	9060.	9060.	9060.
15-19	9103.	0.	0.	0.	9103.	9103.	9103.
20-24	9103.	0.	0.	0.	9103.	9103.	9103.
25-29	9103.	0.	0.	0.	9103.	9103.	9103.
30-34	9103.	0.	0.	0.	9103.	9103.	9103.
35-39	9103.	0.	0.	0.	9103.	9103.	9103.
40-44	9103.	0.	0.	0.	9103.	9103.	9103.
45-49	9103.	0.	0.	0.	9103.	9103.	9103.
50-54	9103.	0.	0.	0.	9103.	9103.	9103.
55-59	9103.	0.	0.	0.	9103.	9103.	9103.
60-64	9103.	0.	0.	0.	9103.	9103.	9103.
65-69	8640.	0.	0.	0.	8640.	8640.	8640.
70-74	8640.	0.	0.	0.	8640.	8640.	8640.
75-79	8640.	0.	0.	0.	8640.	8640.	8640.
80-84	8640.	0.	0.	0.	8640.	8640.	8640.
85+	8640.	0.	0.	0.	8640.	8640.	8640.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: inpatient physician fees (specialist)

Males							
Age	Cost in yrs 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	1827.	0.	0.	0.	1827.	1827.	1827.
1-2	1827.	0.	0.	0.	1827.	1827.	1827.
3-4	1827.	0.	0.	0.	1827.	1827.	1827.
5-9	1827.	0.	0.	0.	1827.	1827.	1827.
10-14	1827.	0.	0.	0.	1827.	1827.	1827.
15-19	1827.	0.	0.	0.	1827.	1827.	1827.
20-24	1827.	0.	0.	0.	1827.	1827.	1827.
25-29	1827.	0.	0.	0.	1827.	1827.	1827.
30-34	1827.	0.	0.	0.	1827.	1827.	1827.
35-39	1827.	0.	0.	0.	1827.	1827.	1827.
40-44	1827.	0.	0.	0.	1827.	1827.	1827.
45-49	1827.	0.	0.	0.	1827.	1827.	1827.
50-54	1827.	0.	0.	0.	1827.	1827.	1827.
55-59	1827.	0.	0.	0.	1827.	1827.	1827.
60-64	1827.	0.	0.	0.	1827.	1827.	1827.
65-69	1827.	0.	0.	0.	1827.	1827.	1827.
70-74	1827.	0.	0.	0.	1827.	1827.	1827.
75-79	1827.	0.	0.	0.	1827.	1827.	1827.
80-84	1827.	0.	0.	0.	1827.	1827.	1827.
85 +	1827.	0.	0.	0.	1827.	1827.	1827.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: inpatient physician fees (specialist)

Females							
Age	Cost in yrs 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	1827.	0.	0.	0.	1827.	1827.	1827.
1-2	1827.	0.	0.	0.	1827.	1827.	1827.
3-4	1827.	0.	0.	0.	1827.	1827.	1827.
5-9	1827.	0.	0.	0.	1827.	1827.	1827.
10-14	1827.	0.	0.	0.	1827.	1827.	1827.
15-19	1827.	0.	0.	0.	1827.	1827.	1827.
20-24	1827.	0.	0.	0.	1827.	1827.	1827.
25-29	1827.	0.	0.	0.	1827.	1827.	1827.
30-34	1827.	0.	0.	0.	1827.	1827.	1827.
35-39	1827.	0.	0.	0.	1827.	1827.	1827.
40-44	1827.	0.	0.	0.	1827.	1827.	1827.
45-49	1827.	0.	0.	0.	1827.	1827.	1827.
50-54	1827.	0.	0.	0.	1827.	1827.	1827.
55-59	1827.	0.	0.	0.	1827.	1827.	1827.
60-64	1827.	0.	0.	0.	1827.	1827.	1827.
65-69	1827.	0.	0.	0.	1827.	1827.	1827.
70-74	1827.	0.	0.	0.	1827.	1827.	1827.
75-79	1827.	0.	0.	0.	1827.	1827.	1827.
80-84	1827.	0.	0.	0.	1827.	1827.	1827.
85 +	1827.	0.	0.	0.	1827.	1827.	1827.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: inpatient physician fees (non-spec.)

Males							
Age	Cost in yrs 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	535.	0.	0.	0.	535.	535.	535.
1-2	535.	0.	0.	0.	535.	535.	535.
3-4	535.	0.	0.	0.	535.	535.	535.
5-9	535.	0.	0.	0.	535.	535.	535.
10-14	535.	0.	0.	0.	535.	535.	535.
15-19	570.	0.	0.	0.	570.	570.	570.
20-24	570.	0.	0.	0.	570.	570.	570.
25-29	570.	0.	0.	0.	570.	570.	570.
30-34	570.	0.	0.	0.	570.	570.	570.
35-39	570.	0.	0.	0.	570.	570.	570.
40-44	570.	0.	0.	0.	570.	570.	570.
45-49	570.	0.	0.	0.	570.	570.	570.
50-54	570.	0.	0.	0.	570.	570.	570.
55-59	570.	0.	0.	0.	570.	570.	570.
60-64	570.	0.	0.	0.	570.	570.	570.
65-69	570.	0.	0.	0.	570.	570.	570.
70-74	570.	0.	0.	0.	570.	570.	570.
75-79	570.	0.	0.	0.	570.	570.	570.
80-84	570.	0.	0.	0.	570.	570.	570.
85+	570.	0.	0.	0.	570.	570.	570.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: inpatient physician fees (non-spec.)

Females							
Age	Cost in yrs 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	535.	0.	0.	0.	535.	535.	535.
1-2	535.	0.	0.	0.	535.	535.	535.
3-4	535.	0.	0.	0.	535.	535.	535.
5-9	535.	0.	0.	0.	535.	535.	535.
10-14	535.	0.	0.	0.	535.	535.	535.
15-19	570.	0.	0.	0.	570.	570.	570.
20-24	570.	0.	0.	0.	570.	570.	570.
25-29	570.	0.	0.	0.	570.	570.	570.
30-34	570.	0.	0.	0.	570.	570.	570.
35-39	570.	0.	0.	0.	570.	570.	570.
40-44	570.	0.	0.	0.	570.	570.	570.
45-49	570.	0.	0.	0.	570.	570.	570.
50-54	570.	0.	0.	0.	570.	570.	570.
55-59	570.	0.	0.	0.	570.	570.	570.
60-64	570.	0.	0.	0.	570.	570.	570.
65-69	570.	0.	0.	0.	570.	570.	570.
70-74	570.	0.	0.	0.	570.	570.	570.
75-79	570.	0.	0.	0.	570.	570.	570.
80-84	570.	0.	0.	0.	570.	570.	570.
85+	570.	0.	0.	0.	570.	570.	570.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: outpatient physician fees (specialist)

<i>Males</i>							
<i>Age</i>	<i>Cost in yrs 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1	114.	2788.	1411.	870.	2902.	1525.	984.
1-2	114.	2763.	1408.	869.	2877.	1522.	983.
3-4	114.	2728.	1402.	868.	2842.	1516.	982.
5-9	114.	2660.	1390.	865.	2774.	1504.	979.
10-14	114.	2553.	1368.	858.	2667.	1482.	972.
15-19	114.	2443.	1344.	851.	2557.	1458.	965.
20-24	114.	2328.	1318.	845.	2442.	1432.	959.
25-29	114.	2196.	1284.	836.	2310.	1398.	950.
30-34	114.	2045.	1238.	820.	2159.	1352.	934.
35-39	114.	1879.	1179.	797.	1993.	1293.	911.
40-44	114.	1701.	1109.	767.	1815.	1223.	881.
45-49	114.	1515.	1027.	729.	1629.	1141.	843.
50-54	114.	1327.	935.	682.	1441.	1049.	796.
55-59	114.	1139.	834.	626.	1253.	948.	740.
60-64	114.	961.	731.	565.	1075.	845.	679.
65-69	114.	789.	623.	496.	903.	737.	610.
70-74	114.	635.	518.	425.	749.	632.	539.
75-79	114.	504.	424.	357.	618.	538.	471.
80-84	114.	393.	341.	294.	507.	455.	408.
85+	114.	253.	227.	202.	367.	341.	316.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: outpatient physician fees (specialist)

<i>Females</i>							
<i>Age</i>	<i>Cost in yrs 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1	114.	2920.	1432.	874.	3034.	1546.	988.
1-2	114.	2900.	1430.	874.	3014.	1544.	988.
3-4	114.	2872.	1427.	874.	2986.	1541.	988.
5-9	114.	2816.	1420.	873.	2930.	1534.	987.
10-14	114.	2727.	1406.	870.	2841.	1520.	984.
15-19	114.	2630.	1389.	866.	2744.	1503.	980.
20-24	114.	2522.	1369.	861.	2636.	1483.	975.
25-29	114.	2401.	1341.	854.	2515.	1455.	968.
30-34	114.	2265.	1306.	843.	2379.	1420.	957.
35-39	114.	2117.	1262.	829.	2231.	1376.	943.
40-44	114.	1956.	1209.	809.	2070.	1323.	923.
45-49	114.	1785.	1145.	784.	1899.	1259.	898.
50-54	114.	1603.	1070.	751.	1717.	1184.	865.
55-59	114.	1414.	983.	709.	1528.	1097.	823.
60-64	114.	1220.	884.	658.	1334.	998.	772.
65-69	114.	1017.	768.	590.	1131.	882.	704.
70-74	114.	823.	647.	513.	937.	761.	627.
75-79	114.	653.	532.	435.	767.	646.	549.
80-84	114.	510.	429.	361.	624.	543.	475.
85+	114.	333.	292.	255.	447.	406.	369.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: home modification

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Males							
Age	Cost in yrs. 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	4000.	0.	0.	0.	4000.	4000.	4000.
1-2	4000.	0.	0.	0.	4000.	4000.	4000.
3-4	4000.	0.	0.	0.	4000.	4000.	4000.
5-9	4000.	0.	0.	0.	4000.	4000.	4000.
10-14	4000.	0.	0.	0.	4000.	4000.	4000.
15-19	4000.	0.	0.	0.	4000.	4000.	4000.
20-24	4000.	0.	0.	0.	4000.	4000.	4000.
25-29	4000.	0.	0.	0.	4000.	4000.	4000.
30-34	4000.	0.	0.	0.	4000.	4000.	4000.
35-39	4000.	0.	0.	0.	4000.	4000.	4000.
40-44	4000.	0.	0.	0.	4000.	4000.	4000.
45-49	4000.	0.	0.	0.	4000.	4000.	4000.
50-54	4000.	0.	0.	0.	4000.	4000.	4000.
55-59	4000.	0.	0.	0.	4000.	4000.	4000.
60-64	4000.	0.	0.	0.	4000.	4000.	4000.
65-69	4000.	0.	0.	0.	4000.	4000.	4000.
70-74	4000.	0.	0.	0.	4000.	4000.	4000.
75-79	4000.	0.	0.	0.	4000.	4000.	4000.
80-84	4000.	0.	0.	0.	4000.	4000.	4000.
85 +	4000.	0.	0.	0.	4000.	4000.	4000.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: home modification

Females							
Age	Cost in yrs. 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1	4000.	0.	0.	0.	4000.	4000.	4000.
1-2	4000.	0.	0.	0.	4000.	4000.	4000.
3-4	4000.	0.	0.	0.	4000.	4000.	4000.
5-9	4000.	0.	0.	0.	4000.	4000.	4000.
10-14	4000.	0.	0.	0.	4000.	4000.	4000.
15-19	4000.	0.	0.	0.	4000.	4000.	4000.
20-24	4000.	0.	0.	0.	4000.	4000.	4000.
25-29	4000.	0.	0.	0.	4000.	4000.	4000.
30-34	4000.	0.	0.	0.	4000.	4000.	4000.
35-39	4000.	0.	0.	0.	4000.	4000.	4000.
40-44	4000.	0.	0.	0.	4000.	4000.	4000.
45-49	4000.	0.	0.	0.	4000.	4000.	4000.
50-54	4000.	0.	0.	0.	4000.	4000.	4000.
55-59	4000.	0.	0.	0.	4000.	4000.	4000.
60-64	4000.	0.	0.	0.	4000.	4000.	4000.
65-69	4000.	0.	0.	0.	4000.	4000.	4000.
70-74	4000.	0.	0.	0.	4000.	4000.	4000.
75-79	4000.	0.	0.	0.	4000.	4000.	4000.
80-84	4000.	0.	0.	0.	4000.	4000.	4000.
85 +	4000.	0.	0.	0.	4000.	4000.	4000.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: physical therapy

<i>Males</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1.....	11000.	0.	0.	0.	11000.	11000.	11000.
1-2.....	11000.	0.	0.	0.	11000.	11000.	11000.
3-4.....	11000.	0.	0.	0.	11000.	11000.	11000.
5-9.....	11000.	0.	0.	0.	11000.	11000.	11000.
10-14.....	11000.	0.	0.	0.	11000.	11000.	11000.
15-19.....	11000.	0.	0.	0.	11000.	11000.	11000.
20-24.....	11000.	0.	0.	0.	11000.	11000.	11000.
25-29.....	11000.	0.	0.	0.	11000.	11000.	11000.
30-34.....	11000.	0.	0.	0.	11000.	11000.	11000.
35-39.....	11000.	0.	0.	0.	11000.	11000.	11000.
40-44.....	11000.	0.	0.	0.	11000.	11000.	11000.
45-49.....	11000.	0.	0.	0.	11000.	11000.	11000.
50-54.....	11000.	0.	0.	0.	11000.	11000.	11000.
55-59.....	11000.	0.	0.	0.	11000.	11000.	11000.
60-64.....	11000.	0.	0.	0.	11000.	11000.	11000.
65-69.....	11000.	0.	0.	0.	11000.	11000.	11000.
70-74.....	11000.	0.	0.	0.	11000.	11000.	11000.
75-79.....	11000.	0.	0.	0.	11000.	11000.	11000.
80-84.....	11000.	0.	0.	0.	11000.	11000.	11000.
85+.....	11000.	0.	0.	0.	11000.	11000.	11000.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: physical therapy

<i>Females</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1.....	11000.	0.	0.	0.	11000.	11000.	11000.
1-2.....	11000.	0.	0.	0.	11000.	11000.	11000.
3-4.....	11000.	0.	0.	0.	11000.	11000.	11000.
5-9.....	11000.	0.	0.	0.	11000.	11000.	11000.
10-14.....	11000.	0.	0.	0.	11000.	11000.	11000.
15-19.....	11000.	0.	0.	0.	11000.	11000.	11000.
20-24.....	11000.	0.	0.	0.	11000.	11000.	11000.
25-29.....	11000.	0.	0.	0.	11000.	11000.	11000.
30-34.....	11000.	0.	0.	0.	11000.	11000.	11000.
35-39.....	11000.	0.	0.	0.	11000.	11000.	11000.
40-44.....	11000.	0.	0.	0.	11000.	11000.	11000.
45-49.....	11000.	0.	0.	0.	11000.	11000.	11000.
50-54.....	11000.	0.	0.	0.	11000.	11000.	11000.
55-59.....	11000.	0.	0.	0.	11000.	11000.	11000.
60-64.....	11000.	0.	0.	0.	11000.	11000.	11000.
65-69.....	11000.	0.	0.	0.	11000.	11000.	11000.
70-74.....	11000.	0.	0.	0.	11000.	11000.	11000.
75-79.....	11000.	0.	0.	0.	11000.	11000.	11000.
80-84.....	11000.	0.	0.	0.	11000.	11000.	11000.
85+.....	11000.	0.	0.	0.	11000.	11000.	11000.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: occupational therapy

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Males							
Age	Cost in yrs. 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1.....	27.	0.	0.	0.	27.	27.	27.
1-2.....	27.	0.	0.	0.	27.	27.	27.
3-4.....	27.	0.	0.	0.	27.	27.	27.
5-9.....	27.	0.	0.	0.	27.	27.	27.
10-14.....	27.	0.	0.	0.	27.	27.	27.
15-19.....	27.	0.	0.	0.	27.	27.	27.
20-24.....	27.	0.	0.	0.	27.	27.	27.
25-29.....	27.	0.	0.	0.	27.	27.	27.
30-34.....	27.	0.	0.	0.	27.	27.	27.
35-39.....	27.	0.	0.	0.	27.	27.	27.
40-44.....	27.	0.	0.	0.	27.	27.	27.
45-49.....	27.	0.	0.	0.	27.	27.	27.
50-54.....	27.	0.	0.	0.	27.	27.	27.
55-59.....	27.	0.	0.	0.	27.	27.	27.
60-64.....	27.	0.	0.	0.	27.	27.	27.
65-69.....	27.	0.	0.	0.	27.	27.	27.
70-74.....	27.	0.	0.	0.	27.	27.	27.
75-79.....	27.	0.	0.	0.	27.	27.	27.
80-84.....	27.	0.	0.	0.	27.	27.	27.
85+.....	27.	0.	0.	0.	27.	27.	27.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: occupational therapy

Females							
Age	Cost in yrs. 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1.....	27.	0.	0.	0.	27.	27.	27.
1-2.....	27.	0.	0.	0.	27.	27.	27.
3-4.....	27.	0.	0.	0.	27.	27.	27.
5-9.....	27.	0.	0.	0.	27.	27.	27.
10-14.....	27.	0.	0.	0.	27.	27.	27.
15-19.....	27.	0.	0.	0.	27.	27.	27.
20-24.....	27.	0.	0.	0.	27.	27.	27.
25-29.....	27.	0.	0.	0.	27.	27.	27.
30-34.....	27.	0.	0.	0.	27.	27.	27.
35-39.....	27.	0.	0.	0.	27.	27.	27.
40-44.....	27.	0.	0.	0.	27.	27.	27.
45-49.....	27.	0.	0.	0.	27.	27.	27.
50-54.....	27.	0.	0.	0.	27.	27.	27.
55-59.....	27.	0.	0.	0.	27.	27.	27.
60-64.....	27.	0.	0.	0.	27.	27.	27.
65-69.....	27.	0.	0.	0.	27.	27.	27.
70-74.....	27.	0.	0.	0.	27.	27.	27.
75-79.....	27.	0.	0.	0.	27.	27.	27.
80-84.....	27.	0.	0.	0.	27.	27.	27.
85+.....	27.	0.	0.	0.	27.	27.	27.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: special education

<i>Males</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1.....	0.	6707.	4889.	3511.	6707.	4889.	3511.
1-2.....	0.	6968.	5344.	4060.	6968.	5344.	4060.
3-4.....	761.	6999.	5681.	4588.	7759.	6441.	5348.
5-9.....	3642.	5243.	4464.	3773.	8885.	8106.	7415.
10-14.....	3642.	2466.	2256.	2050.	6108.	5898.	5692.
15-19.....	2245.	129.	125.	120.	2374.	2370.	2365.
20-24.....	192.	0.	0.	0.	192.	192.	192.
25-29.....	0.	0.	0.	0.	0.	0.	0.
30-34.....	0.	0.	0.	0.	0.	0.	0.
35-39.....	0.	0.	0.	0.	0.	0.	0.
40-44.....	0.	0.	0.	0.	0.	0.	0.
45-49.....	0.	0.	0.	0.	0.	0.	0.
50-54.....	0.	0.	0.	0.	0.	0.	0.
55-59.....	0.	0.	0.	0.	0.	0.	0.
60-64.....	0.	0.	0.	0.	0.	0.	0.
65-69.....	0.	0.	0.	0.	0.	0.	0.
70-74.....	0.	0.	0.	0.	0.	0.	0.
75-79.....	0.	0.	0.	0.	0.	0.	0.
80-84.....	0.	0.	0.	0.	0.	0.	0.
85+.....	0.	0.	0.	0.	0.	0.	0.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: special education

<i>Females</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1.....	0.	6717.	4896.	3516.	6717.	4896.	3516.
1-2.....	0.	6978.	5351.	4065.	6978.	5351.	4065.
3-4.....	761.	7007.	5687.	4592.	7768.	6447.	5353.
5-9.....	3642.	5249.	4468.	3777.	8891.	8110.	7419.
10-14.....	3642.	2470.	2259.	2052.	6112.	5901.	5694.
15-19.....	2245.	129.	125.	120.	2374.	2370.	2365.
20-24.....	192.	0.	0.	0.	192.	192.	192.
25-29.....	0.	0.	0.	0.	0.	0.	0.
30-34.....	0.	0.	0.	0.	0.	0.	0.
35-39.....	0.	0.	0.	0.	0.	0.	0.
40-44.....	0.	0.	0.	0.	0.	0.	0.
45-49.....	0.	0.	0.	0.	0.	0.	0.
50-54.....	0.	0.	0.	0.	0.	0.	0.
55-59.....	0.	0.	0.	0.	0.	0.	0.
60-64.....	0.	0.	0.	0.	0.	0.	0.
65-69.....	0.	0.	0.	0.	0.	0.	0.
70-74.....	0.	0.	0.	0.	0.	0.	0.
75-79.....	0.	0.	0.	0.	0.	0.	0.
80-84.....	0.	0.	0.	0.	0.	0.	0.
85+.....	0.	0.	0.	0.	0.	0.	0.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: long-term care

<i>Males</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1.....	6336.	0.	0.	0.	6336.	6336.	6336.
1-2.....	6336.	0.	0.	0.	6336.	6336.	6336.
3-4.....	6336.	0.	0.	0.	6336.	6336.	6336.
5-9.....	6336.	0.	0.	0.	6336.	6336.	6336.
10-14.....	6336.	0.	0.	0.	6336.	6336.	6336.
15-19.....	6336.	0.	0.	0.	6336.	6336.	6336.
20-24.....	6336.	0.	0.	0.	6336.	6336.	6336.
25-29.....	6336.	0.	0.	0.	6336.	6336.	6336.
30-34.....	6336.	0.	0.	0.	6336.	6336.	6336.
35-39.....	6336.	0.	0.	0.	6336.	6336.	6336.
40-44.....	6336.	0.	0.	0.	6336.	6336.	6336.
45-49.....	6336.	0.	0.	0.	6336.	6336.	6336.
50-54.....	6336.	0.	0.	0.	6336.	6336.	6336.
55-59.....	6336.	0.	0.	0.	6336.	6336.	6336.
60-64.....	6336.	0.	0.	0.	6336.	6336.	6336.
65-69.....	6336.	0.	0.	0.	6336.	6336.	6336.
70-74.....	6336.	0.	0.	0.	6336.	6336.	6336.
75-79.....	6336.	0.	0.	0.	6336.	6336.	6336.
80-84.....	6336.	0.	0.	0.	6336.	6336.	6336.
85+.....	6336.	0.	0.	0.	6336.	6336.	6336.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: long-term care

<i>Females</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1.....	6336.	0.	0.	0.	6336.	6336.	6336.
1-2.....	6336.	0.	0.	0.	6336.	6336.	6336.
3-4.....	6336.	0.	0.	0.	6336.	6336.	6336.
5-9.....	6336.	0.	0.	0.	6336.	6336.	6336.
10-14.....	6336.	0.	0.	0.	6336.	6336.	6336.
15-19.....	6336.	0.	0.	0.	6336.	6336.	6336.
20-24.....	6336.	0.	0.	0.	6336.	6336.	6336.
25-29.....	6336.	0.	0.	0.	6336.	6336.	6336.
30-34.....	6336.	0.	0.	0.	6336.	6336.	6336.
35-39.....	6336.	0.	0.	0.	6336.	6336.	6336.
40-44.....	6336.	0.	0.	0.	6336.	6336.	6336.
45-49.....	6336.	0.	0.	0.	6336.	6336.	6336.
50-54.....	6336.	0.	0.	0.	6336.	6336.	6336.
55-59.....	6336.	0.	0.	0.	6336.	6336.	6336.
60-64.....	6336.	0.	0.	0.	6336.	6336.	6336.
65-69.....	6336.	0.	0.	0.	6336.	6336.	6336.
70-74.....	6336.	0.	0.	0.	6336.	6336.	6336.
75-79.....	6336.	0.	0.	0.	6336.	6336.	6336.
80-84.....	6336.	0.	0.	0.	6336.	6336.	6336.
85+.....	6336.	0.	0.	0.	6336.	6336.	6336.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: homecare/skilled nursing

Males							
Age	Cost in yrs. 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1.....	928.	12671.	6415.	3953.	13599.	7343.	4881.
1-2.....	928.	12560.	6400.	3951.	13488.	7328.	4879.
3-4.....	928.	12400.	6375.	3946.	13328.	7303.	4874.
5-9.....	928.	12093.	6318.	3931.	13021.	7246.	4859.
10-14.....	928.	11606.	6216.	3900.	12534.	7144.	4828.
15-19.....	928.	11105.	6109.	3870.	12033.	7037.	4798.
20-24.....	928.	10580.	5993.	3842.	11508.	6921.	4770.
25-29.....	928.	9981.	5838.	3799.	10909.	6766.	4727.
30-34.....	928.	9297.	5627.	3727.	10225.	6555.	4655.
35-39.....	928.	8541.	5361.	3624.	9469.	6289.	4552.
40-44.....	928.	7732.	5039.	3486.	8660.	5967.	4414.
45-49.....	928.	6888.	4667.	3312.	7816.	5595.	4240.
50-54.....	928.	6030.	4248.	3098.	6958.	5176.	4026.
55-59.....	928.	5177.	3791.	2845.	6105.	4719.	3773.
60-64.....	928.	4366.	3321.	2568.	5294.	4249.	3496.
65-69.....	928.	3589.	2831.	2255.	4517.	3759.	3183.
70-74.....	928.	2886.	2355.	1930.	3814.	3283.	2858.
75-79.....	928.	2290.	1927.	1622.	3218.	2855.	2550.
80-84.....	928.	1787.	1549.	1338.	2715.	2477.	2266.
85+.....	928.	1149.	1030.	919.	2077.	1958.	1847.

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Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: homecare/skilled nursing

Females							
Age	Cost in yrs. 0 + 1	Present value of future costs			Total costs		
		2.5%	6%	10%	2.5%	6%	10%
<1.....	928.	13274.	6509.	3974.	14202.	7437.	4902.
1-2.....	928.	13184.	6501.	3974.	14112.	7429.	4902.
3-4.....	928.	13054.	6487.	3973.	13982.	7415.	4901.
5-9.....	928.	12800.	6453.	3967.	13728.	7381.	4895.
10-14.....	928.	12396.	6390.	3953.	13324.	7318.	4881.
15-19.....	928.	11954.	6315.	3936.	12882.	7243.	4864.
20-24.....	928.	11464.	6221.	3915.	12392.	7149.	4843.
25-29.....	928.	10913.	6097.	3882.	11841.	7025.	4810.
30-34.....	928.	10297.	5937.	3834.	11225.	6865.	4762.
35-39.....	928.	9620.	5737.	3767.	10548.	6665.	4695.
40-44.....	928.	8890.	5495.	3678.	9818.	6423.	4606.
45-49.....	928.	8112.	5207.	3562.	9040.	6135.	4490.
50-54.....	928.	7288.	4865.	3413.	8216.	5793.	4341.
55-59.....	928.	6427.	4469.	3224.	7355.	5397.	4152.
60-64.....	928.	5544.	4019.	2989.	6472.	4947.	3917.
65-69.....	928.	4622.	3492.	2683.	5550.	4420.	3611.
70-74.....	928.	3743.	2941.	2333.	4671.	3869.	3261.
75-79.....	928.	2968.	2418.	1978.	3896.	3346.	2906.
80-84.....	928.	2318.	1950.	1641.	3246.	2878.	2569.
85+.....	928.	1515.	1326.	1158.	2443.	2254.	2086.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: equipment

<i>Males</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1	2256.	35732.	18090.	11147.	37988.	20346.	13403.
1-2	2256.	35419.	18047.	11141.	37675.	20303.	13397.
3-4	2256.	34969.	17976.	11127.	37225.	20232.	13383.
5-9	2256.	34102.	17818.	11085.	36358.	20074.	13341.
10-14	2256.	32730.	17530.	10997.	34986.	19786.	13253.
15-19	2256.	31317.	17228.	10913.	33573.	19484.	13169.
20-24	2256.	29835.	16901.	10835.	32091.	19157.	13091.
25-29	2256.	28148.	16463.	10712.	30404.	18719.	12968.
30-34	2256.	26217.	15869.	10511.	28473.	18125.	12767.
35-39	2256.	24087.	15118.	10221.	26343.	17374.	12477.
40-44	2256.	21803.	14211.	9832.	24059.	16467.	12088.
45-49	2256.	19425.	13160.	9339.	21681.	15416.	11595.
50-54	2256.	17004.	11979.	8736.	19260.	14235.	10992.
55-59	2256.	14598.	10691.	8024.	16854.	12947.	10280.
60-64	2256.	12313.	9366.	7240.	14569.	11622.	9496.
65-69	2256.	10120.	7984.	6358.	12376.	10240.	8614.
70-74	2256.	8140.	6642.	5443.	10396.	8898.	7699.
75-79	2256.	6458.	5435.	4575.	8714.	7691.	6831.
80-84	2256.	5039.	4367.	3775.	7295.	6623.	6031.
85 +	2256.	3239.	2904.	2592.	5495.	5160.	4848.

Patient profile: 43 severe Guillain Barre/influenza vaccine (respiratory insufficiency)
Direct cost category: equipment

<i>Females</i>							
<i>Age</i>	<i>Cost in yrs. 0 + 1</i>	<i>Present value of future costs</i>			<i>Total costs</i>		
		<i>2.5%</i>	<i>6%</i>	<i>10%</i>	<i>2.5%</i>	<i>6%</i>	<i>10%</i>
<1	2256.	37432.	18354.	11206.	39688.	20610.	13462.
1-2	2256.	37178.	18332.	11206.	39434.	20588.	13462.
3-4	2256.	36811.	18293.	11203.	39067.	20549.	13459.
5-9	2256.	36096.	18198.	11186.	38352.	20454.	13442.
10-14	2256.	34958.	18021.	11147.	37214.	20277.	13403.
15-19	2256.	33712.	17808.	11101.	35968.	20064.	13357.
20-24	2256.	32330.	17542.	11040.	34586.	19798.	13296.
25-29	2256.	30774.	17192.	10948.	33030.	19448.	13204.
30-34	2256.	29038.	16742.	10812.	31294.	18998.	13068.
35-39	2256.	27130.	16178.	10622.	29386.	18434.	12878.
40-44	2256.	25071.	15496.	10371.	27327.	17752.	12627.
45-49	2256.	22877.	14683.	10046.	25133.	16939.	12302.
50-54	2256.	20551.	13720.	9625.	22807.	15976.	11881.
55-59	2256.	18125.	12604.	9091.	20381.	14860.	11347.
60-64	2256.	15633.	11333.	8429.	17889.	13589.	10685.
65-69	2256.	13035.	9848.	7566.	15291.	12104.	9822.
70-74	2256.	10555.	8293.	6579.	12811.	10549.	8835.
75-79	2256.	8370.	6817.	5577.	10626.	9073.	7833.
80-84	2256.	6536.	5498.	4627.	8792.	7754.	6883.
85 +	2256.	4271.	3740.	3266.	6527.	5996.	5522.

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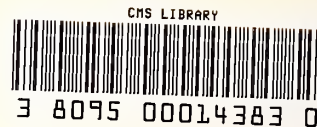
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